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ABSTRACT

The purpose of this publication is to suggest ideas and resources that may help stimulate educational activities focusing on our environment. A cross-section of school programs, educational organizations and institutions, citizen and professional groups, and government agencies located in Massachusetts are described as well as bibliography sources. Each offers particular services for student and teachers who are interested in environmental issues. Following the name of each program/group/source is its address, person to contact, and description of its purpose, activities, and available resource materials. More than 65 sources are catalogued. In addition, information is provided for identifying and updating knowledge of innovative programs in environmental education in the state of Massachusetts. This work was prepared under an ESEA Title III contract. (BL)

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EDUCATION FOR SURVIVAL

Massachusetts Resources For Environmental Education

SE012 124

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massachusetts resources for environmental education

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EDUCATION FOR SURVIVAL

massachusetts resources for
environmental education

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Illustrations by Peter Mullen

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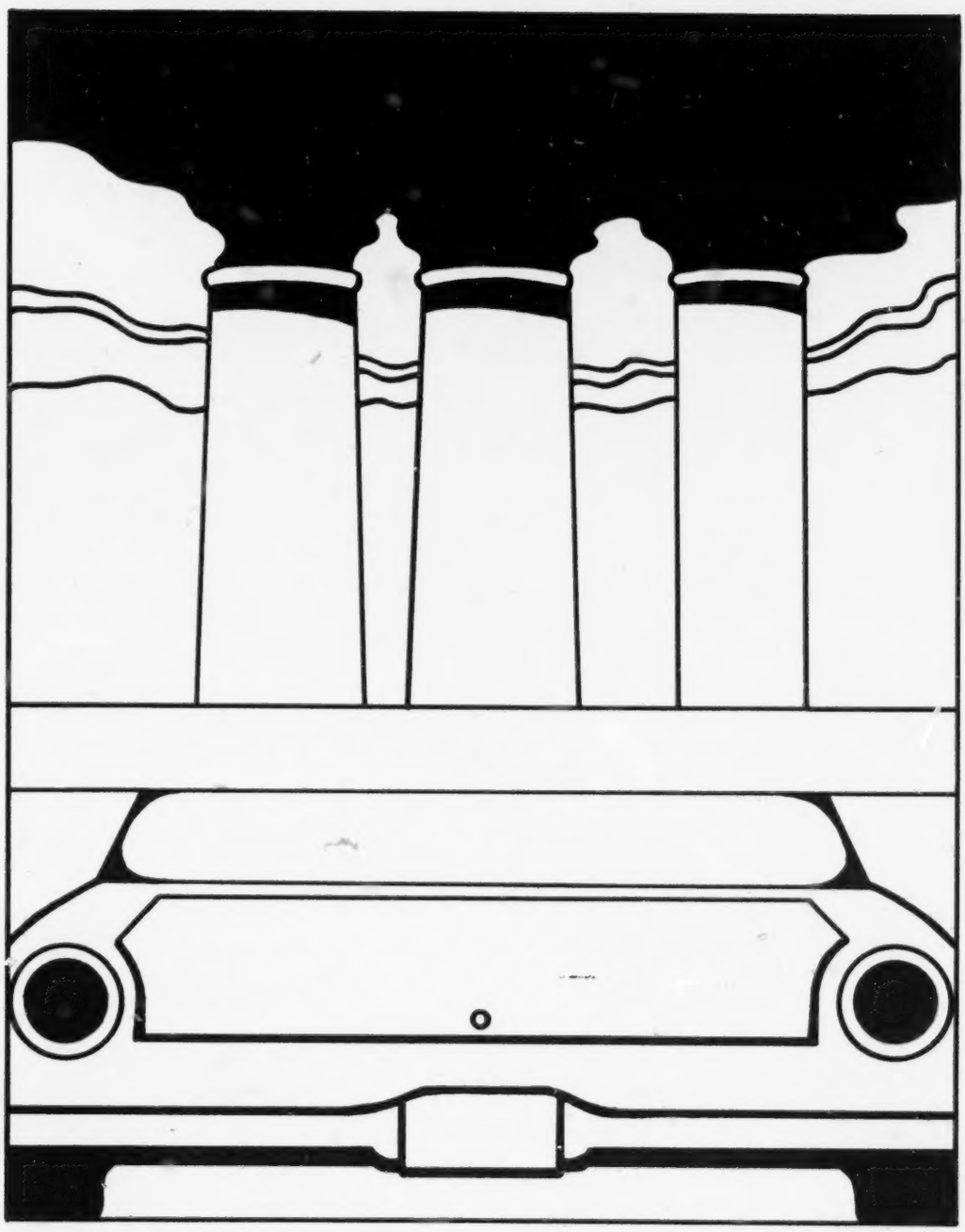


INTRODUCTION

The purpose of this publication is to suggest some ideas and some resources that may help to stimulate educational activities focusing on our environment. The school programs, the educational organizations and institutions, the citizen and professional groups, and the bibliographies described here do not constitute a complete catalogue of the many resources, long-established and newly developing, that exist in Massachusetts. They provide simply a cross-section of resources that offer particular services for students and teachers who are interested in environmental issues.

"Environmental education" itself is a recent phrase, just as wide public concern about the complex relationships between the environment and the quality of human life is relatively new. In the past year the country has experienced an awakening of interest in environmental issues. The schools reflect this interest with a marked increase in courses and activities that encourage students to investigate and better understand the environment. The terminology surrounding this interest tends to be imprecise and confusing. Conservation education, outdoor education, nature study, natural science, ecology, and environmental science — terms that are themselves often ambiguous — are sometimes used interchangeably, compounding the ambiguities. "Environmental education" is frequently used to give activities in any of these areas a more voguish label.

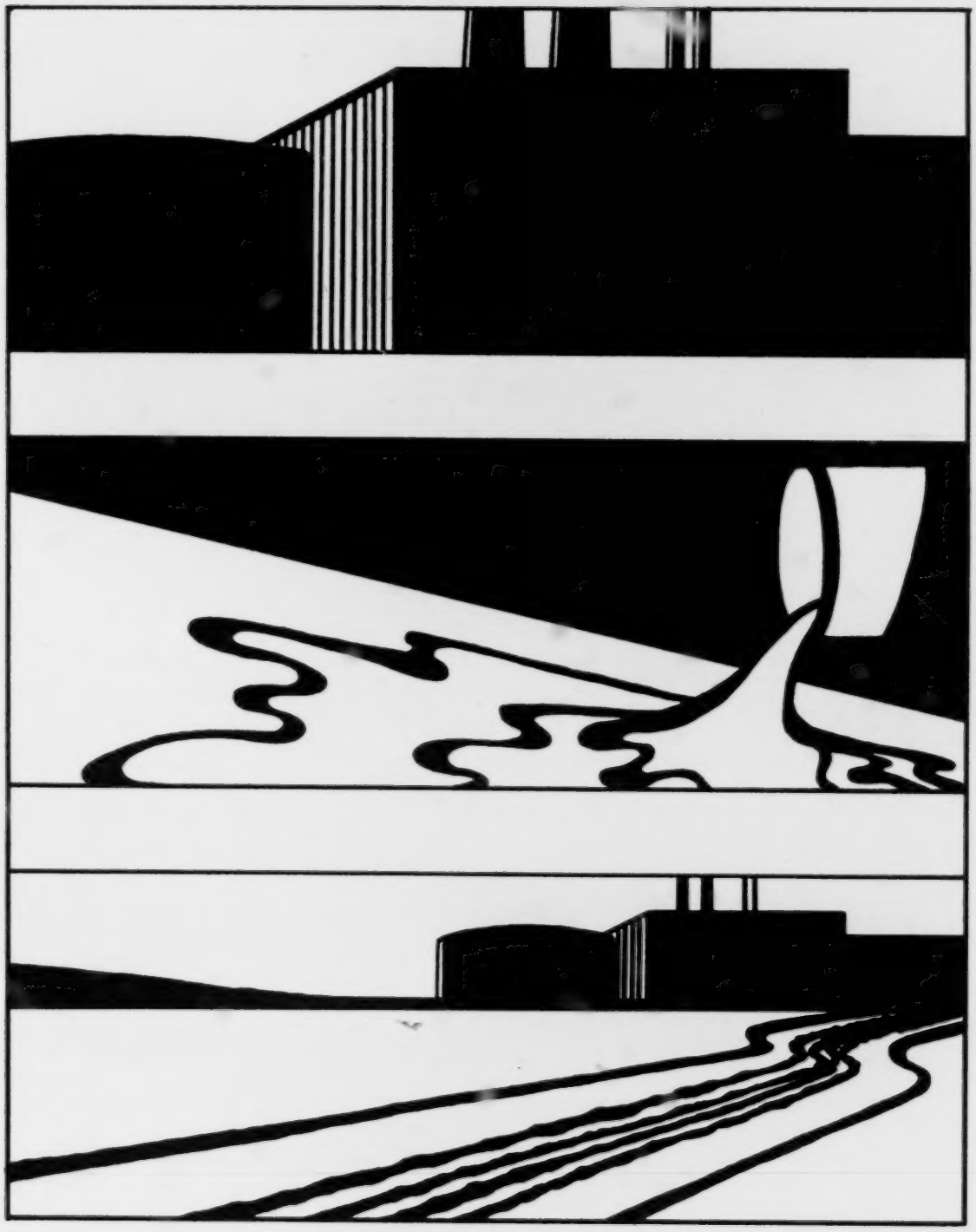
Conservation education has stressed preservation and use of natural resources and only relatively recently has come out of the woods, so to speak, to stress the vital interactions between natural and human resources. Outdoor education can mean nature study that takes place outside but has come to refer to educational approaches in scientific and non-scientific fields that use the out-of-doors as an arena for teaching and learning experiences that cannot take place as effectively or as appropriately in the school building. Ecology, the study of relationships among organisms and their environments, is moving in education toward including urban as well as rural environments and environmental science is much the same.

Environmental education has broader meaning than any of these; it includes them all, but stresses the importance of studying the environment in an interdisciplinary way. We are becom-

ing increasingly aware that, as Robert Penn Warren writes in *All the Kings Men,* "the world is all of one piece . . . like an enormous spider web and if you touch it, however lightly, at any point, the vibration ripples to the remotest perimeter." The relationships and interactions among man, his natural environment, his social milieu, his economics, his politics, his tastes, and his daily habits are both highly sensitive and deeply binding. Each shapes and is in turn shaped by the others.

We still have much to learn about our intricate ecological system. There are many more questions about relationships and consequences than there are answers, and there are undoubtedly even more questions that have still to be framed. Environmental education in its wide sense seeks to bring about a better understanding of the world's complexities, to encourage people to ask questions and search for answers across the spectrum of natural processes and man-made institutions, and ultimately to help form attitudes and life-styles that will enable us to survive harmoniously with our environments.

Robert A. Watson, Director
Bureau of Curriculum Innovation



ENVIRONMENTAL EDUCATION PROGRAMS IN THE SCHOOLS

The programs described in this chapter are only a small sample of the growing number of environmentally-focused projects, courses, and activities that are now being introduced in Massachusetts schools. They have been selected because they comprise differing approaches, philosophies, and student audiences. Some are regional programs, serving students in several school systems. Others have been designed and implemented by individual teachers for their own students. Some grow out of the natural sciences and move toward ecological issues and the relationships between man and his natural environment. Others originate in the social sciences and explore man's options for dealing with the environment he is creating — his cities, his technologies, his populations.

Particular attention is given here to those projects initiated with funds from Title III of the Elementary and Secondary Education Act. A major purpose of the Title III legislation is to support the development of innovative projects that can serve as models for other school systems. Several Massachusetts ESEA Title III projects have environmental education components. Some of these projects have now completed their final year of federal support, and in some cases they are being taken over for continued operation by local school budgets. In other cases, their developmental phases are completed and the resulting curricula, materials, and approaches remain in the schools though the projects themselves have ceased. They all have been attempts to explore new ways of improving educational programs for the populations they serve and, from their strengths and weaknesses, to suggest ideas that might be developed in other schools.

The Massachusetts Department of Education has recently set new priorities for the funding of future ESEA Title III projects, stressing the need for projects that are specifically directed toward helping students and educational institutions come to grips with the problems and demands of the contemporary environment. In a June, 1970, memorandum to Massachusetts school systems, the Department outlined nine "Learner Needs" and seven "Institutional Needs" as being those to which new Title III

proposals should be addressed. Several of these needs are directly concerned with environmental education.

I. Learner Needs

1. *Making the Curriculum More Relevant to Student Needs and Wants:* Involving administrators, teachers, students, parents, and outside resource people from university, business, and labor in redefining the curriculum in terms of preparation for world of today and tomorrow; new approaches to old subject matter and new patterns of school organization.
2. *Education for Survival:* Experimental programs in sex, alcohol, and drug education to give students the most accurate and up-to-date information to enable them to make rational decisions affecting their lives; programs to involve students in meeting present and future threats to existence of our environment and of human life itself.
3. *Preparation for Life in a Changing and Pluralistic World:* Helping students to have a greater empathy for other value systems and to be ready to take an active part in a world of constant change.

II. Institutional Needs

1. *Redefining the Role of the Classroom Teacher*: Pre and in-service programs to enable teachers to see themselves not only as information and knowledge dispensers, but as resource people assisting their students to think critically and to construct value systems built on respect for dignity and worth of all individuals and cultures.
2. *Training Administrators and Teachers as Change Agents* in the school and community willing to support programs to make our schools more human, more geared to needs of today's students, and more responsive to parents and communities they serve; readiness to adopt innovative programs.
3. *Community and Parental Involvement in the Schools:* Establish procedures to enable parents, the community, students, teachers, and administrators to help define school programs and goals; training parents as auxiliary personnel; involvement of universities in providing courses and training for community people.

4. *Learning and Teaching Environments:* The relationship between physical setting and quality of learning; alternative organizational patterns both within school and without; role of educators, students, and community in planning new educational institutions.

The following programs are reviewed in order to present teachers and curriculum planners with a variety of approaches to environmental education so that they may be stimulated to develop other programs with local or federal funds that are appropriate to their students' needs and to the talents and resources available within their communities.

PROJECT LIGHTHOUSE

Hingham Public Schools
352 Lincoln Street
Hingham, Massachusetts 02043
Tel: (617) 749-6972

John Osterman, Project Director

Cooperating Communities: Carver, Cohasset, Duxbury, Hanover, Hanson, Hingham, Hull, Marshfield, Plymouth, and Scituate

Serving ten communities on the South Shore, Project Lighthouse operated for three years under ESEA Title III funds, developing new curriculum materials for environmental education. The project staff and consultants designed and produced multimedia kits and curriculum guides in outdoor science and local history, shaping the units around local natural characteristics and history. Each kit contains all materials needed by a teacher and her class to carry out the curriculum activities — reading materials, films, film strips, tapes, worksheets, equipment for the class and for individual students. An accompanying teacher's curriculum guide gives the teacher thorough directions and background information for her instruction, suggesting student activities, field trip sites, and follow-up lessons, and permitting the teacher to use the kit as is or to modify it to her needs, if she is so inclined.

As the kits were developed — some for elementary grades others for higher grades and special education classes — they were field tested with a selected group of interested teachers. These teachers then made recommendations for their revision.

After revision, the kits were produced in sufficient quantity so that each of the ten cooperating school districts could retain its own copy. Any district wishing additional copies of a given kit, could prepare them in-house, using the instructions and ordering information in each curriculum guide.

Science-based units included *Woodlands,* a unit on ecology involving systematic study of wooded areas within walking distance of the schools; *South Shore Geology; Salt Water Aquarium,* a unit designed to enable students to prepare their own aquarium to study local sea life; *Cranberries; Togetherness,* a kit for young children to develop their awareness of the natural environment; *Seashores,* a sixth grade unit on beach and coastal ecology; *Marine Biology,* a supplement to the secondary general science curriculum; and a *Guide to the South Shore Beaches.*

Project Lighthouse operated on two premises, that there was a critical need for good instructional materials in the environmental sciences and that environmental education should take place within the student's own immediate environment. The curriculum kits prepared by the project were therefore designed both to provide teachers with necessary materials and information and to capitalize upon the resource of the South Shore.

FALMOUTH OCEANOGRAPHIC EDUCATION CENTER

Falmouth Public Schools
340 Teaticket Highway
P.O. Box 585
Falmouth, Massachusetts 02541
Tel: (617) 548-6731

James Kinney, Project Director

The Oceanographic Education Center was started to bring the unique local environment and institutional resources in the Falmouth area into the junior and senior high school curriculum and to develop teaching materials and strategies in the relatively neglected science of oceanography. The Center, in its three years of operation, has succeeded in creating new courses in oceanography for eighth grade and high school students, in training local teachers in the subject, and in building new relationships between the Falmouth schools and local scientific institutions. It has prepared teaching materials and bibliographies that are available to other school systems as well.

Eighth graders in the Falmouth schools spend an entire week in a field course on oceanography under the supervision of members of the school staff. The course meets for five consecutive days at the Sea Farm Research Foundation Laboratory on Bourne's pond, a typical Atlantic estuary suitable for small group study. The Laboratory's facilities and two small skiffs have been made available to the project. The teaching staff brings other equipment — nets, collection bottles, and measuring devices. A-field course manual prepared by the project staff is given to students and teachers. This manual serves as a text for the course as well as a detailed plan for each day's activities. It is complete with illustrations, maps, charts, and bibliographies. While the course is taught primarily by professionals on the project staff, classroom teachers also participate in the instruction so that they can conduct follow-up activities in the classrooms and be more intensively involved in the succeeding years.

The high school biology course has also been heavily revised to emphasize oceanography and part of the course activities include field trips to the Sea Farm Laboratory. Curriculum materials, films, and other teaching aids were gathered and prepared by the project staff and are available to interested teachers who wish to examine them. In addition, the project has arranged an elective series of monthly lectures on oceanography given by members of the Woods Hole Oceanographic Institute staff for high school students from Falmouth and several surrounding communities. Here students can also receive help on research projects, whether they are conducting them on their own or in conjunction with high school science course work.

During the summers, the Center sponsored seven-week inservice training sessions for teachers from the Cape Cod area to acquaint them with the materials being developed by the project, with the resources in the region, and with approaches for teaching their students about the ocean and the coastal environment. In three years, seventy teachers participated in these training courses.

As federal funds expire for this project, much of its developmental work is complete. The courses it has initiated will continue to operate and the rich collection of curriculum materials, teaching aids, films, maps, and bibliographies that it has compiled and developed will remain available to the schools of Falmouth.

CENTER FOR COLLABORATIVE LEARNING MEDIA PACKAGES (CLMP)

Wellesley Public Schools
12 Seaward Road
Wellesley, Massachusetts 02181
Tel: (617) 235-7250

George Moore, Project Director
Warren M. Little, Consultant, Environmental Education

The need to provide students and teachers with creative and engaging educational materials gave rise to Wellesley's Center for Collaborative Learning Media Packages (CLMP). During its three years of ESEA Title III funding, the Center developed, tested, and produced twenty-one individual educational units for primary and secondary schools covering a broad range of current topics in science, social studies, art, and other fields. Each unit is organized as a kit or collaborative learning media package that contains multi-media materials for the students including films, tapes, activity suggestions, displays, reading material, and a detailed manual for teachers. In short, each kit provides students and teachers with the basic ingredients for exploring the subject at hand. The project proved so valuable that the Center now continues to operate on local funds, designing additional units and refining existing ones.

Some of the CLMP units deal with community issues and have relevance for environmental education. One of the most successful kits is *Waste — Problem Toward Solution,* a unit on pollution. The unit was designed by the Center staff and by teachers from the Wellesley School System for use with fifth and sixth graders. The entire unit consists of a teacher's guide, filmstrips, tapes, slides, worksheets, reprints and booklets, case studies, and a pollution game — all of which can be used conveniently by a teacher and her class. Teachers in the Wellesley schools who wish to use the unit make arrangements with the Center staff so that a rotation schedule can be maintained.

The pollution game is particularly interesting. The basis for the game was developed for the Center by Abt Associates, Inc. and modified by the Wellesley staff as it was tested in the classroom. The game involves simulation and role playing, giving students the experience of creating and solving pollution problems. The Center is unable to provide sets of the game to all those outside of Wellesley who are requesting it and is therefore

making arrangements for the game to be manufactured and sold commercially. Members of the Center staff are eager to discuss the game and the pollution unit with anyone who is interested and to assist representatives of other school systems in developing similar educational packages for their own local use.

GATEWAY ENVIRONMENTAL STUDY SITE

Gateway Regional School District
Littleville Road
Huntington, Massachusetts 01050
Tel: (413) 667-3475

Mr. Edwin F. Harrington, Assistant Superintendent

In a low-budget effort that draws together diverse sources of funds, the Gateway Regional School District has created an environmental program to serve students and teachers in all grades of its seven member towns. With a grant of about $1,500 from the Hampshire Conservation Commission, the district is developing a several-acre track of land adjoining the junior-senior high school as an environmental study site. To agument the existing stream and the wetlands that gradually slope up to plant-covered hills and woods, a small stocked pond is being constructed. By the fall of 1970, the site will be ready for groups of visiting students; foot paths and bridges will be laid out and many of the plants and trees identified and labeled.

The training of teachers to use the site effectively and the creation of appropriate teaching materials is being financed with ESEA Title V funds. For under $5,000, the district operated a three-week workshop in August, 1970, for the project director, one teacher from each of the seven elementary schools in the seven district towns, two junior high and two senior high teachers. Some attended for two and some for three weeks. During the first week the participants became familiar with current approaches to environmental education and with the environmental study site. Consultant-led sessions and field trips supplemented staff time spent working on the lay-out and completion of the outdoor area. The group then prepared resource kits for each grade level in the district to be used by teachers throughout the district during the coming year. The kits are graded boxes containing pamphlets, books, films, video-tapes, and magnifying glasses for teachers who wish to use preparatory and follow-up

materials. The teachers who attended the summer workshop will return to their schools in the fall to assist their colleagues in making use of the new site and the new materials.

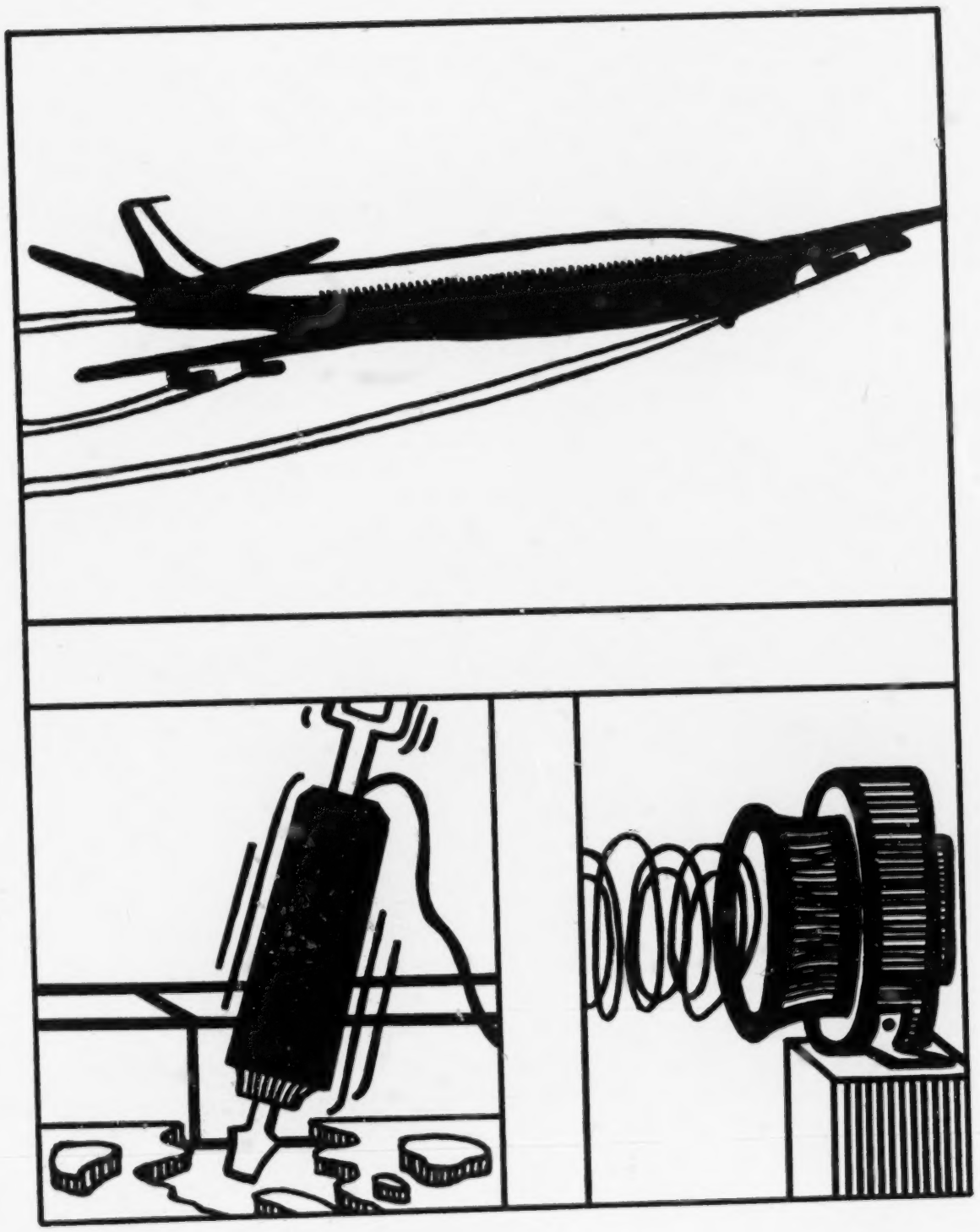
Particularly in a large, rural school district, transporting students for field trips can be cumbersome, time-consuming, and expensive. The Gateway District has already partially solved this problem. For the past three years, its ESEA Title III-funded Project Mountaintop has supported a special classroom bus, complete with microphones, headsets, tape recorders, video-tape projection equipment, and black curtains. This bus has been used to take children on a variety of excursions and field trips in order to combat their rural isolation. It is extensively equipped so that learning time is not lost during travel time. A second similar bus has been added recently. Federal ESEA Title III funds have expired, but the school district now has the buses and, in addition to other field trips, plans to use them extensively in bringing classes to and from the environmental study site so that the site can be a convenient resource for the entire district.

NEEDHAM OUTDOOR CONSERVATION STUDY AREA

Needham Public Schools
1330 Highland Avenue
Needham, Massachusetts 02194
Tel: (617) 444-4100

Thomas Eastman, Director of Science

Thirty-five acres of land on the grounds of Needham's Newman Junior High School are being developed to provide an outdoor conservation study area. The site, rich in plant and animal life, is being redesigned to include a mile-long access trail, wildlife islands, a plant succession area, soil erosion and insect control demonstrations, a stand of 1,000 white spruce trees, a half-acre pond, and three outdoor classrooms. Already, starting in the seventh grade, the Needham junior high school students participate in a life science curriculum based on the Rand McNally Interactive Environment Program. The new outside area is to be an important component of this curriculum as well as a resource for other subject areas — mathematics, art, language. It will also be a field site for elementary and high school classes and for community groups.



The way in which the town of Needham has gone about planning and building the outdoor provides an interesting model for other cities and towns. It is a broad community effort. After a school survey of potential outdoor study sites adjacent to the elementary schools, school officials began meeting with the Needham Conservation Commission to consider adapting the available sites for teaching. These early discussions indicated that there were many organizations and individuals in the community interested in developing local areas for conservation education. Representatives of the school system then joined with spokesmen from the Garden Club, Scouts, the Bird Club, the Sportsman's Club, the Retired Men's Club, the Conservation Commission, and the U.S. Soil Conservation Service to establish an Outdoor Education Study Committee. It is this committee that has prepared plans for the Outdoor Conservation Study Area and will continue to oversee its development, as well as the creation of additional smaller sites throughout the town.

The total budget for initial preparation of the Study Area is $15,200. Individuals and community groups donated $9,600 worth of materials and services in the form of construction materials, labor, plants and trees, land surveys, and landscaping. The remaining $5,600 needed to excavate a pond, build a wooden bridge, and purchase more shrubs and trees is being provided by funds voted in a separate article in the 1970 town meeting warrant. Thus, there are no direct development costs in the school budget.

Community participation has already brought material help and planning ideas to the project. In the future, members of the community who have special skills and conservation interests will be encouraged to use their expertise by instructing students and members of the school faculty. Already, in the spring of 1970, two retired engineers from the Needham Retired Men's Club worked with teams of students to survey the site, teaching students about surveying while making use of their professional knowledge.

The Outdoor Conservation Study Area is to remain incomplete, in flux, so that it is an on-going laboratory in which students, teachers, scout groups, local organizations, and individuals can work together to increase its potential and to learn about the dynamics of the environment and man's interaction with it.

QUABBIN REGIONAL ENVIRONMENTAL CLASSROOMS AND CONSERVATION CORPS

Quabbin Regional School District
Quabbin Regional Junior-Senior High School
Barre, Massachusetts 01005
Tel: (617) 335-4651

Kent F. Bailey, Principal

Four years ago the Quabbin Regional School District initiated what became a system-wide interdisciplinary program in conservation education. The program is noteworthy not only for the extent to which it has involved students in much more ambitious projects than are usually undertaken in the schools, but also for the fact that the program grew and operated at virtually no additional cost to the school district.

The program began at the junior-senior high school where conservation courses were incorporated into the curriculum. As a major activity in these courses, the students planned and developed land adjoining the school into outdoor study sites and outdoor classrooms. During class time and after school, students polled teachers and classmates to determine what kinds of facilities would be most useful to them. They then designed and constructed eleven outdoor meeting areas, complete with blackboards and seats, each able to accommodate thirty students and each built to fit comfortably into the natural terrain. The building equipment and the furnishings were donated by the community and collected from attics and basements. The labor was provided by the students. These outdoor classrooms are now used for many kinds of activities; the orchestra plays outside, French classes meet *en plein air,* and, of course, science and conservation courses make extensive use of the sites.

A student Conservation Corps was organized to give particularly interested high school juniors and seniors responsibility for overseeing site developments, conducting additional projects, and actually going into the elementary schools in the district to provide younger children with conservation instruction and field trip leadership. Most members of the Corps were in the basic studies program; many had little interest in school work or in staying in school until they became active in the Corps. As Corps members, their activities have included building a pond

on the school land, constructing a weather station, and reopening 58 miles of the old Indian "Wapac Trail" that will eventually be opened to join with the Appalachian Trail in Hanover, New Hampshire. They also shaped the elementary school conservation program, planning lessons that they then taught to the students, and developing outdoor study areas at each of the elementary schools. These high school students have contributed immense amounts of time and talent to local conservation education, and, of the ten Corps members who graduated in 1970, nine are going on for further education specifically in the field of conservation and environmental studies.

LINCOLN-SUDBURY CONSERVATION PROGRAM

Lincoln-Sudbury Regional School District
Lincoln-Sudbury Regional High School
Sudbury, Massachusetts 01776
Tel: (617) 443-2859

Joseph F. Freitus, Director

Starting in the fall of 1970, many of the conservation activities that were successful in the Quabbin Regional School District will be incorporated into the existing program in the Lincoln-Sudbury Regional School District, and Joseph Freitus, formerly the director of the Quabbin program, will be joining the Lincoln-Sudbury staff. Already the Lincoln-Sudbury High School offers an environmental problems course to all of its students. The anticipation is that, as happened in Quabbin, students will take responsibility for developing outdoor classrooms and study sites on the 1,800 acre natural area adjoining the high school. A Conservation Corps is also being initiated, providing students, particularly those who are not in the academic mainstream, with opportunities for involvement in environmental and conservation projects and for teaching in the elementary grades. (Precedent for using high school students to teach younger children has already been set in the teaching of reading in Lincoln and Sudbury schools.)

Information on how student conservation activities were started and maintained in the Quabbin District and how they are being developed in Lincoln-Sudbury can be obtained from Joseph Freitus.

ACTON-BOXBOROUGH FILM-MAKING PROJECT

Acton-Boxborough Regional School District
Acton-Boxborough Regional Junior High School
Acton, Massachusetts 01720
Tel: (617) 263-7716

John Brodie, Project Director

Seventh and eighth graders are involved in a new program at the Acton-Boxborough Regional Junior High School that enables them to translate their interests and research in environmental issues into their own films, film strips, and tapes. The program started during the 1968-69 school year when three members of the junior high school staff — teachers of science, social studies, and English — decided to experiment with a multi-disciplinary, multi-media approach through which students could explore the environment and their own creativity.

Students involved in the program share the three program teachers for their regular courses in English, social studies, and science. Here these teachers raise environmental and ecological questions when appropriate. The students also have a one month unit on the environment in their seventh grade general science course. In addition, however, these students and teachers meet once a week from January through the remainder of the school year to work on program activities. Environmental issues serve as focus for the participants. Students work in small teams to select topics for independent research, gather information, take photographs, and finally produce films, film strips and commentaries on the subjects they have chosen. The staff sees its role as advisory; it recommends sources of information and assists with technical aspects of film making, but the content of the films is determined by the students themselves.

The program has been enthusiastically received. Students who in other subject areas had been poorly motivated or lacking in verbal skills have achieved a new sense of accomplishment in the completion of their films and film strips and a greater involvement in the topics they studied in order to prepare them.

During the summer of 1970, the program staff plans to develop its own audio-visual presentation, documenting the operation of the program and illustrating the students' film work. This

presentation will then be available to schools interested in adapting the program for their own students.

LIBERTY COUNCIL OF SCHOOLS

Conservation Education Center
c/o Massachusetts Audubon Society
Great South Road
Lincoln, Massachusetts 01773
Tel: (617) 259-9500

Former Directors:

Warren M. Little, c/o Wellesley Public Schools
Chan Waldron, c/o Lincoln Public Schools
Charles E. Roth, c/o Massachusetts Audubon Society

Cooperating Communities: Acton, Bedford, Bolton, Carlisle, Concord, Framingham, Harvard, Lincoln, Maynard, Stow, and Sudbury

A central component of the Liberty Council ESEA Title III project was its conservation education program. This program, with its headquarters at the Hatheway School of Conservation Education of the Massachusetts Audubon Society, has now completed its cycle with federal funds. Although it is no longer in operation, its books and printed materials are still available and its activities and philosophy may be of interest to other schools.

Liberty's primary purpose was to bring ecological awareness into all facets of the curriculum by providing materials and in-service training for teachers, by assisting in instruction, and by encouraging broad community interest in environmental literacy. Rather than devoting efforts to writing curriculum or designing materials for others to then use, the staff concentrated on developing in teachers a sensitivity to environmental issues so that they could shape their own instruction in these directions.

During the summers, the project staff conducted intensive in-service workshops for teachers of all grades from throughout the participating school systems. During the school year, it operated additional workshops at the local district level in many subject areas and ran a number of successful week-long day

camps for students and teachers. Nearly 400 teachers participated in the course of three years. The workshops were designed to encourage teachers to develop their own teaching materials, using resources from the project's extensive library and suggestions from the project staff. As teachers tested their materials with their classes, they were asked to send copies back to the project so that they could be on file for others to examine.

Not all teachers in the several member communities were interested in or able to participate in the workshops directly, but other services were available to them through the project. A *Field Study Resource Guide* listing local field trip sites, farms, industries, nurseries, and publicly and privately owned lands was distributed throughout the Liberty schools. A second guide listing community resources, people and organizations in the area that could offer something to the study of the environment, was also distributed. The project library at the Hatheway School of Conservation Education developed into the best collection of environmental education materials in New England. This library remains open to the public. A group of local women who volunteered to serve as "Liberty Ladies" were trained by the project staff to assist teachers on class field trips, enabling teachers who were hesitant to embark on outdoor instruction to receive skilled help.

Members of the project staff also did some classroom teaching in the elementary grades. This instruction was as much for the classroom teachers as for the students. When a project staff member agreed to work with a class, he tried not to superimpose his own lesson, but to develop a plan in which the teacher herself was a part. Prior to the instruction, the staff member and the teacher met to plan strategies and to ensure that the lesson would fit into the context of the teacher's curriculum. During the lesson, the teacher could observe or participate as extensively as she wished so that she would gain a sense of how she herself might handle similar lessons.

Finally, the project staff served as a resource for any teacher interested in some aspect of environmental education. It provided consultative help in the development of curriculum plans, in the selection of materials, in the preparation of specific lessons, in the planning of field trips, and in the construction of outdoor classrooms. The project sought to leave Liberty Council teach-

ers with the ability and the resources to carry out environmental education activities on their own initiative.

INSTRUCTIONAL VARIATIONS AT THE MEADOWBROOK SCHOOL

Newton Public Schools
Meadowbrook Junior High School
125 Meadowbrook Road
Newton Center, Massachusetts 02159
Tel: (617) 969-3745

Isa Zimmerman, Project Contact

The entire program at the Meadowbrook Junior High School is an experiment in flexibility and independence for students and teachers alike. Students are free to select their plans of study from a variety of courses in several fields rather than adhere to a standardized or required curriculum. Interest rather than grade level or achievement level determines course enrollment so that seventh, eighth, and ninth graders are often together in a class group. A major emphasis is placed upon independent work, upon development of personal intellectual interests, and upon self-evaluation. Teachers at the Meadowbrook Junior High School have corresponding freedom in their work; they design courses that they would like to teach according to issues that concern them and topics they consider to be educationally pertinent.

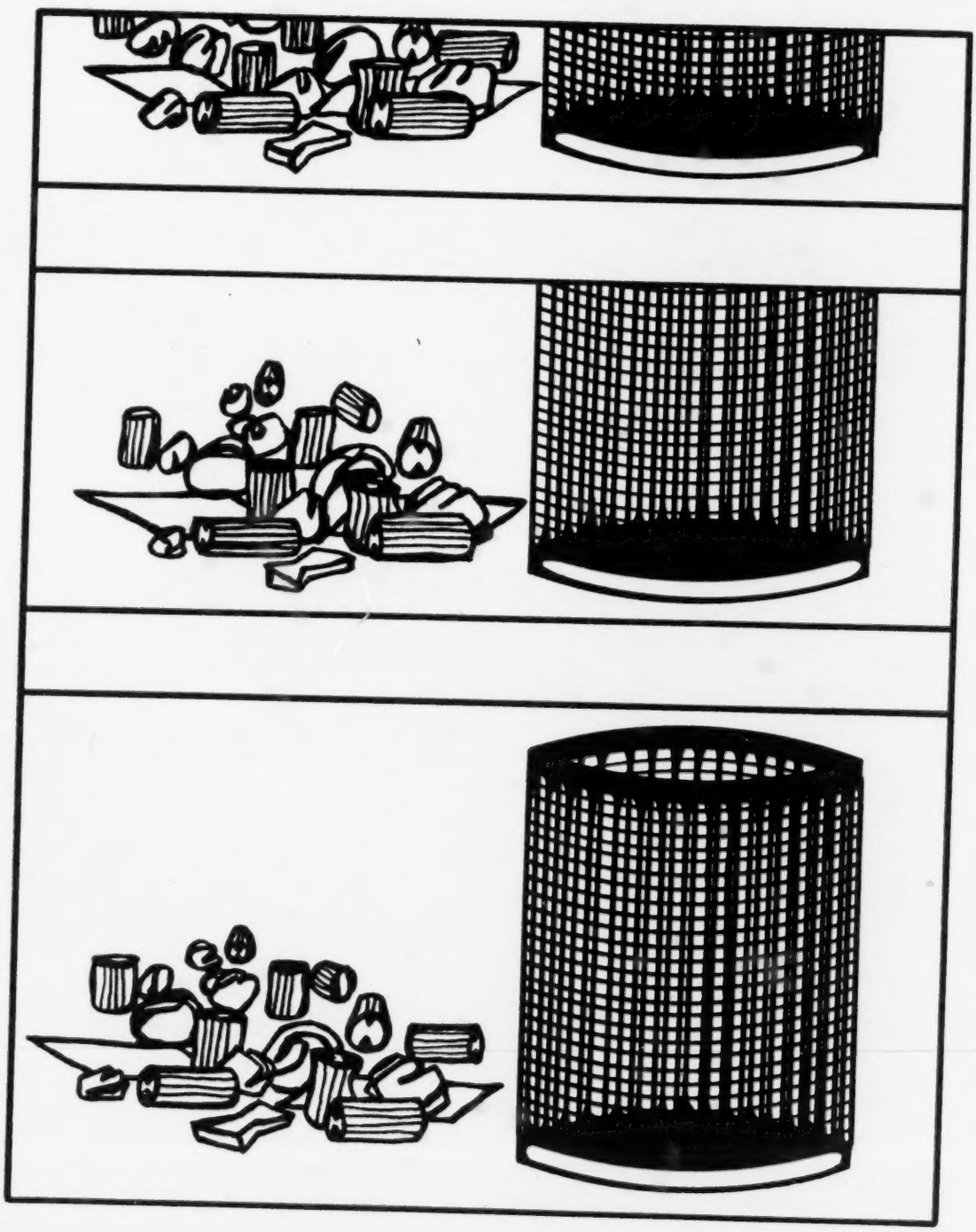
Within this context, some members of the Meadowbrook staff have been developing courses on the environment. Already, through the Science Department, students have access to science courses in ecology. Now, members of the Social Studies and English Departments are approaching ecological and environmental problems from social and political perspectives. During the 1969-70 school year, ten staff members participated in a twelve-week seminar, meeting twice a week to increase their familiarity with environmental issues and with resources and teaching materials. The ultimate objective of this first seminar was to design the framework and evaluation plans for a new social studies ecology course. This was done, and in the fall of 1970 some members of the group will field test, evaluate, and

refine the course that emerged. At that time, the tentative course outline will be published and available to interested outsiders.

What is particularly interesting about the Meadowbrook ecology course seminar is the debate that it generated among its participants about the larger issues regarding the responsibility of the schools and the role of the individual teacher in taking stands on controversial topics, in taking action, and in teaching or urging students to do the same. Once the preservation of the natural environment is viewed in terms of its social, economic, political, and human consequences, it is no longer a benign, "academic" subject. At Meadowbrook it has been a subject that has surfaced central questions that educators must face and resolve, not only in relation to ecology, but to the entire posture of education in the present society.

During the spring of 1970, three different courses in ecology were offered by members of the seminar, each reflecting the perspectives of its instructor, each differing in the degree of activism it directed its students toward, but all based upon the idea that the schools have some responsibility for showing students ways of taking action and channels for bringing about change. One course attempted to do this through role playing and examining the Meadowbrook community for its environmental problems; another required students to do an individual or group project on an urban environmental issue and to become involved in social action; still another course emphasized political steps toward combatting the environmental crisis and required participants to develop a small project that would actually help in solving some aspect of the crisis.

The Meadowbrook experience in developing social science courses in ecology has by no means resolved the issue of the relationship between educational institutions and political or social action. What it has done, in addition to the fact that the staff is now framing courses in environmental education, is to raise the issue in a serious way. Should the schools attempt to reform society or merely mirror it? Teachers in other schools who are working on environmental concerns are also likely to face this issue, and teachers who are about to begin will soon discover it, if it has not yet arisen in another way.



EDUCATION COLLABORATIVE FOR GREATER BOSTON (EdCo)

94 Prescott Street
Cambridge, Massachusetts 02138
Tel: (617) 868-7600 X4656

Robert Peebles, Project Director

Developing understanding of man and his environment is a theme underlying all of the EdCo programs. This ESEA Title III project brings together seven urban and suburban communities to combine their resources, both in and out of the schools, in ways that will benefit city and suburban children. EdCo is operating programs in a variety of fields, attempting to create an urban-suburban partnership in activities that can be performed more effectively through collaborative approaches.

In the spring of 1970, a survey of the seven cooperating systems indicated that each was considering plans for separate summer workshops for their staff in environmental education and ecology. Rather than duplicate their efforts, the schools agreed to work through EdCo, joining together for a single workshop series in which their teachers would work on a mutually useful curriculum on the metropolitan environment.

Representatives from each school system met as workshop members for a number of weeks in the summer of 1970. Part of their time was spent reviewing existing materials and resources to determine what might be applicable for an inter-community program. Part of their time was also spent developing new approaches and action-oriented programs to be used by teachers and students to introduce them to the problems and rewards that suburban as well as urban dwellers experience. The emphasis of the emerging curriculum is upon what happens to neighborhoods as their populations grow and change, upon the relationships between people and their environments, and upon the effects of increased technology and population upon the character of life. Student exchange activities are central to the program, with urban and suburban children visiting each other's communities in order to better understand their own as well as a different living environment. The tentative curriculum was to be tested in the fall of 1970 and refined, under EdCo leadership, during the school year.

BLUE HILLS SUPPLEMENTARY EDUCATION CENTER

Sharon Public Schools
High Street School
Sharon, Massachusetts 02067
Tel: (617) 828-6070

Walter Devine, Project Director
John Colocousis, Director of Science

Cooperating Communities: Avon, Braintree, Canton, Holbrook, Milton, Randolph, Sharon, and Stoughton

The science component of the Blue Hills ESEA Title III Project is primarily one of in-service training for teachers. For the 1970-71 school year, seventeen in-service courses in science are being offered, each given by a qualified professional and each carrying from two to four recommended credit hours and performance requirements equal to those of accredited graduate courses.

Two of these in-service courses are in environmental science — one for elementary and one for secondary school teachers. The purpose of these courses is to develop in teachers both an awareness of the relationships between man and his environment and the necessary skills for translating that awareness into their own curricula. Teachers from the eight Blue Hills Project communities may participate at no charge; teachers from other communities may enroll for a minimal tuition of $10 per semester hour. Additional information on these courses and advice on setting up similar courses elsewhere can be obtained from the project staff.

LOWELL ENVIRONMENTAL ARTS AND SCIENCE PROGRAM (LEASE)

Lowell Public Schools
City Hall Building
Lowell, Massachusetts 01852
Tel: (617) 458-2181

Wayne R. Peters, Superintendent of Schools
John H. Lenihan, Project Director

Encouraging teachers to break from the confines of the conventional classroom and to use resources in the community at

large can be a slow and difficult process, particularly in a school system such as Lowell's where the curriculum has been marked by traditionalism. Project LEASE, the Lowell Environmental Arts and Science Program, was started in 1966 with ESEA Title III funds to facilitate this process.

The purpose of the project has been to stimulate and coordinate the direct use of resources and locations outside the school as mediums for instruction. This it has done by helping teachers to plan and carry out field trips that provide students with first-hand experiences with the environment. Most of the activity has been in the natural sciences in the elementary grades, but the project has provided trips for students of all grades in other subjects as well — history, social studies, and art. Trips have included one-day and over-night visits to local natural sites for wildlife and ecology study, excursions to Boston museums, meetings with local city officials, and visits to local farms and industries.

The project's three-man staff recognized that one of its major tasks in bringing students to outside resources was that of educating teachers. Teachers are often unfamiliar with available resources and see the business of locating field trip sites and arranging schedules and bus transportation as complicated and time-consuming. These mechanical problems, combined with the larger problems of altering teaching styles to new situations, make many teachers reluctant to attempt out-of-the-classroom activities with their students. Project LEASE sought to meet both of these concerns.

First, it served as a field trip clearinghouse for Lowell's public and nonpublic schools, helping teachers to select and schedule class trips. Early in the project's history, the staff surveyed the Lowell and eastern Massachusetts area, collecting information on suitable trip sites and compiling a directory of their facilities and characteristics. The project's service was publicized throughout the system, and the staff held meetings with teachers to discuss ways in which environmental experiences could enrich their courses. Then, teachers who wished their classes to participate had only call the project office to get information on suitable trip sites and to request that arrangements be made.

Secondly, the project took an active role in directing the activities on the field trips. Prior to a trip, the teacher concerned met with a LEASE staff member to obtain background on the

site and teaching materials for class preparation and follow-up. Together they structured the field experience. Particularly on a teacher's first trip, the LEASE staff member handled most of the instruction. The teacher, however, was encouraged to join in so that on later trips she could manage the instruction herself. The intention was that as teachers gradually became comfortable with field activities, they could then assume increased responsibility for planning and leading future trips.

Finally, the project served as a resource center for information and curriculum materials, particularly in the natural sciences. Teachers could call or visit the center to have questions answered or to get more extensive help in course planning. During the 1969-70 school year, the project co-sponsored environmental education teacher workshops with the Lowell Professional Improvement Program, another of the city's ESEA Title III projects. These workshops brought teachers together to review existing curricula in environmental education and to begin developing their own courses and materials.

ESEA Title III funding for the project has now ended, but the Lowell Public Schools hope to keep at least some of the LEASE services alive. One product of the project is the directory of field trip sites, containing descriptions and teaching suggestions for recommended sites in the local area. Another less tangible product is a recognition on the part of many teachers that environmental experiences can enliven the study of many issues and can be well worth the planning that they require. Teacher and student participation grew steadily over the life of the project to the point where over 5,000 students had field experiences during the past school year.

EDUCATIONAL PROJECT TO IMPLEMENT CONSERVATION (EPIC)

Westfield Public Schools
102 Elm Street
Westfield, Massachusetts 01085
Tel: (413) 568-3759

Donald Lambert, Project Director

Initiating broad-based school and community activities in the study of ecology and the environment is the focus of Project

EPIC. The project, serving the Westfield Public Schools, the town's two parochial schools, and Westfield State College, has completed its second year of ESEA Title III support. Like many current programs in environmental education, Project EPIC grew from the concern that environmental issues are too important to be relegated to high school biology courses alone. Its primary purpose has been to develop in teachers of all grade levels and of all subjects an understanding of ecological principles and competence in reflecting this understanding in their teaching. This it has carried out in several ways: through workshops and institutes, through a resource and materials center, through a field trip program, and through a summer enrichment program for students.

The project sponsors several types of in-service workshops. During the school year, EPIC offers introductory workshop series in environmental education for elementary school teachers. In this series of fifteen meetings, each session is devoted to a different ecological issue: the eco-system, ecological history of man, aesthetics of nature, pollution, nuclear power, etc. Rather than have the same participants enroll in all fifteen sessions, teachers are invited to attend one or more meetings according to their interest so that as many teachers as possible join in some part of the total series. Fifteen to twenty people are admitted to each meeting. Consultants from universities and other organizations lead the meetings and attempt to stimulate interest in ecology by providing teachers with a substantial background of information, some of which they can then use with their classes. During the summers, more intensive three-week institutes are conducted for groups of twenty-five teachers offering in-depth training in bringing ecological issues into the curriculum and in leading field trips.

At three times during the year — fall, winter, and spring — the project staff conducts seasonal outdoor workshops. Teachers registering for these workshops attend all three meetings and are grouped according to the grades they teach. The purpose of the series is to explore what can be learned at outdoor sites at different times of year.

The project also sponsors advanced science courses for Westfield teachers and interested high school students. These courses are given at the University of Massachusetts by members of the university faculty. During the 1969-70 school year there was a

two-week evening course in Water Chemistry and a one-week evening course in Microbiology. Project EPIC makes the arrangements for these courses, recruits participants, and provides nightly transportation to and from Amherst.

Specifically for students, the project operates an environmental enrichment program during the summer in two-week sessions. Staffed by teachers and graduate students interested in ecology, the program takes children to various sites throughout the community that have particular scientific, historical, and social bearing on ecological issues. Originally the program was for first through third graders; the children were divided into groups, and each group assigned one teacher for the entire session. In the past summer, however, the program enrolled students all the way through the ninth grade and found it more successful to rotate the staff among the student groups so that each staff member could instruct in his areas of strength.

Project EPIC also coordinates field trips for student groups, serving as a clearinghouse for Westfield teachers by scheduling and arranging field trips for them. The EPIC staff provides teaching materials and equipment (nets, sieves, thermometers, soil testers, binoculars) appropriate to certain field experiences and is available to help teachers select appropriate trips and plan related lessons. Field trips have become so popular that throughout the school year two buses are used daily to transport students from schools to outdoor sites.

A resource library at project headquarters offers what is probably the best collection of books, magazines, and teaching materials for ecology in western Massachusetts. The library has a reproduction service so that teachers can obtain copies of handout materials for their classes. This library is open to teachers, students, and anyone else who wishes to use it.

One problem that the project has faced is that of getting teachers and students to make use of the library. As the project staff visits the schools it informs teachers of the library offerings, and at workshops, which often met in the library, time is provided for participants to become familiar themselves with the materials there. But because the library is not located within the schools for convenient browsing, for many it remains remote. The staff has therefore decided to initiate a system for rotating boxes of books through the elementary school libraries

on a monthly basis to expose more students and teachers to environmental material.

The project is also affiliated with the undergraduate teacher training program at Westfield State College. Students there are introduced to the EPIC library and encouraged to make use of it. When they are practice teaching in the public schools or in the college's laboratory school their instructors at the college and the EPIC staff assist them in planning environmentally-oriented lessons. Often these young future teachers are particularly interested in working with children on current issues at outdoor sites.

Further information on the content of EPIC's in-service workshops, its student summer program, and its clearinghouse and library services can be obtained from the project director.

WALTHAM SUMMER ENVIRONMENTAL SCIENCE PROGRAM

Waltham Public Schools
Central Junior High School
55 School Street
Waltham, Massachusetts 02154
Tel: (617) 893-8050, Ext. 277

Alan Aymes, Program Director

For the past three summers, approximately sixty Waltham school children entering the sixth and seventh grades have joined an inquiry-oriented program in environmental science. The students are divided into two groups, each group meeting for three weeks during the six-week program. The pupil-teacher ratio is close to 8:1. The activities take place largely out-of-doors on a 100 acre site adjacent to the Northeast Elementary School. Students spend three hours each morning studying the area's pond, stream, meadows, and woodlands. They examine the indigenous plants and animals, their interdependence, and their relationship to local weather conditions.

Underlying the program is an emphasis upon the consequences of man's intervention in the eco-system. The program is purposely kept flexible and loosely structured. While there are general plans for each day's activities, there are no formal lectures, tests, or grades. The students are free to pursue their own

interests, to frame their own questions, and to set up self-initiated study projects.

Starting this program was neither complicated nor expensive. It required a suitable outdoor site and a nearby classroom in which to house materials and equipment such as microscopes and weather instruments. From throughout the system, teachers were recruited who had some background in ecology and biology, an interest in environmental interaction, and the ability to let students discover things for themselves. The operating funds of slightly over $4,000 each summer are furnished by the school budget and a small tuition charge. Because the program is intentionally kept open-ended, there is no codified curriculum guide for other schools to examine, but the program director is available to discuss the program with anyone interested in starting a similar venture.

EDUCATIONAL ORGANIZATIONS

MASSACHUSETTS AUDUBON SOCIETY

Hatheway School of Conservation Education
Great South Road
Lincoln, Massachusetts 01773
Tel: (617) 259-9500

Charles E. Roth, Director of Education

The Massachusetts Audubon Society has pioneered in creating interest and leadership in environmental education. The Society is a membership-supported organization broadly concerned with developing public awareness and appreciation of conservation and the environment. It publishes monthly newsletters and a quarterly magazine for its members. *The Conservation Leader* — primarily for local conservation commissions, *The Curious Naturalist* — a monthly magazine for upper elementary and junior high school students, and a variety of free pamphlets on natural history, conservation, and ecological topics. Throughout the state, the Society operates thirty-five units including wildlife sanctuaries and nature centers, summer camps, and education centers.

The Hatheway School of Conservation Education, located in Lincoln, is headquarters for the Society's educational activities. Under the direction of Charles E. Roth, the Hatheway School offers a wide array of services for teachers and students both through its central office and its several education centers throughout the state. It has long operated a corps of teachers, now consisting of approximately twenty-five teacher specialists, that conducts environmental education courses for children in grades four through six in many Massachusetts schools. The staff also provides consultant help to school systems designing their own programs and is currently particularly interested in helping to develop strategies for making environmental education relevant to inner city students.

Two of its current programs are worth special note. In Worcester, Audubon teacher specialists are involved in an experimental program, working with Worcester teachers to initiate an integrated environmental curriculum for grades two through six and to increase the skills of local teachers so that they can

further develop the curriculum themselves. Through the Rocky Knoll Conservation Education Center, the Society has developed an urban conservation education program in three Boston elementary schools. One product of this program is to be a published guide to activities "beyond the classroom." This book will suggest environmental education activities in all fields and will also include special sections of information on plants, insects, birds, and animals that live in the city. The guidebook should be generally useful to students and teachers in urban schools for studying the city's environment.

At its Environmental Curriculum Materials Center, the Hatheway School offers New England's most complete collection of instructional materials, audio-visual aids, and literature for use in environmental education. This library, developed jointly with the Liberty Council — an ESEA Title III project — is housed at the Lincoln headquarters and is open to anyone who wishes to use it. The staff there is ready to recommend materials and help teachers and students locate information for their needs. A $5.00 library loan card is available to those who wish to borrow material.

The Society's education centers extend additional opportunities for students and teachers to become involved in their environment. Laughing Brook in Hampden and Drumlin Farm in Lincoln are outdoor facilities that make good field trip sites for individuals or student groups, and both have staff on hand to assist visitors. Rocky Knoll in Milton is a small nature center that particularly emphasizes the study of the urban environment. The Berkshire County Conservation Center, discussed in the following article, is a materials and information resource for western Massachusetts.

The Hatheway School also conducts courses for teachers and other interested adults and camping experiences for young people. School systems can contract for in-service workshops for their staff on such subjects as the natural world and man, the environment, the use of school grounds as outdoor laboratories, and other topics that meet the specific needs of teachers involved. During the summer, the School offers a four-week Conservation Education Institute for teachers of all grade levels and a Conservation Caravan that gives teachers direct exposure to environmental problems throughout New England as they participate in one or two-week study tours. In addition, adult

courses in many subjects are offered at the several education centers. For young children, the Audubon Society operates eight summer day camps, and, for older children, one resident camp and a touring camp.

Further information on any of the Massachusetts Audubon Society's educational offerings can be obtained from the Director of the Hatheway School of Conservation Education.

BERKSHIRE COUNTY CONSERVATION SERVICES CENTER

11 Housatonic Street
Lenox, Massachusetts 01240
Tel: (413) 637-2591

Mrs. Betty Phinney

The Conservation Services Center, sponsored by the Massachusetts Audubon Society, is an extension of the Hatheway School of Conservation Education and serves western Massachusetts. Members of the Center staff divid their time between acting as Audubon teacher specialists through the Pleasant Valley Wildlife Sanctuary and operating the Center. The Center houses a library of articles, pamphlets, and newspaper clippings on conservation and environmental issues, particularly those relevant to the Berkshire County region; this library is open to students and teachers.

The staff is on hand afternoons, 1-4 p.m., to help with the development of courses, units, and materials for environmental education and to help students and adults increase their awareness of local environmental problems. It is in touch with existing educational programs in the area and has, in many cases, been instrumental in getting them started. Staff members will meet with student groups and teachers to discuss local issues and explore ways in which they can become more involved in environmental activities in and out of the classroom. Thus, the Center serves as a resource to the schools, offering information on other programs, suggestions for field trip sites, techniques, and curriculum materials, and assisting in the design of new programs.

EDUCATION DEVELOPMENT CENTER, INC. (EDC)

55 Chapel Street
Newton, Massachusetts 02160
Tel: (617) 969-7100

Joe H. Griffith, Director of the Elementary Science Study
Peter Dow, Director of the Social Studies Curriculum Program

Several projects within the Education Development Center, Inc. deal with issues related to environmental education. Two — the Elementary Science Study and the Social Studies Curriculum Program — have already produced environmental curriculum materials that are available to the schools.

The Elementary Science Study (ESS) of EDC now offers over fifty science units for use in kindergarten through the eighth grade, covering a wide range of topics concerning the natural environment. Units such as *Animals in the Classroom, Budding Twigs, Growing Seeds, Pond Water,* vary in length and purpose. Some are appropriate for brief series of classes, others for longer blocks of study. Some are designed to be used as whole-class activities; others can be used conjointly with other activities. Each unit includes a teacher's guide. Some offer additional materials — kits, film loops, films, student booklets, or worksheets. Many provide specific suggestions for their use in city schools.

Central to ESS materials is the discovery approach. Units are structured so that students work directly with their subject matter — live animals, seeds, water — and are encouraged to question and formulate their own concepts rather than be told answers. ESS offers workshops and films to prepare teachers to use the units and the discovery approach successfully. As the units are completed, they are published and distributed by the Webster Division of the McGraw-Hill Book Company. Units not yet commercially available may be purchased as Working Papers directly from ESS. *The ESS Newsletter* keeps interested teachers informed about ESS activities, teaching ideas, workshops, and new units.

The Social Studies Curriculum Program of EDC has prepared an extensive curriculum entitled *Man, A Course of Study.* In the hands of a teacher who is interested in broad exploration of the interaction between man and his environment, this curric-

ulum provides the foundation for studying the environment from the point of view of the social sciences. Information on *Man, A Course of Study* can be obtained from the EDC Social Studies Curriculum Program.

WGBH URBAN CONSERVATION PROJECT FOR INSTRUCTIONAL TELEVISION

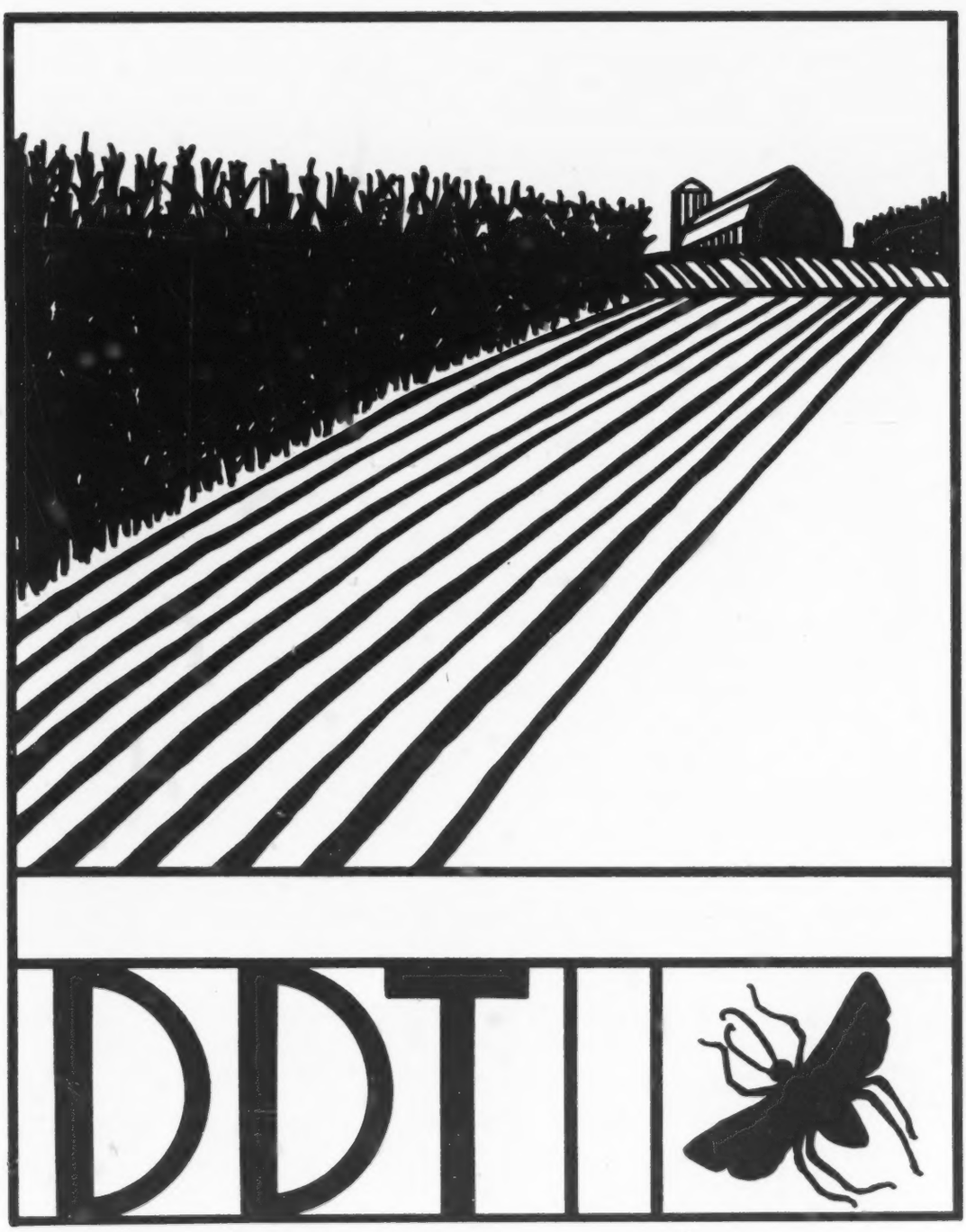
Western Avenue
Allston, Massachusetts 02134
Tel: (617) 868-3800

John Irving, Director, Education Division

Starting in mid-October of 1970, schools throughout the country will have access through television to a new series of films and teaching materials that deal specifically with the urban environment. Several agencies, including the Department of Housing and Urban Development, the Twenty-One Inch Classroom, and some private foundations have funded the Urban Conservation Project at WGBH. The results of the project are five thirty-minute films presenting urban children exploring and commenting upon their neighborhoods. The purpose of these films is to stimulate an educated awareness of the city — its sights and sounds, its patterns, its resources, and its limitations — so that young people and adults can better understand the benefits and the problems that the environment affords city dwellers.

Accompanying the series is a teacher's guide, a teacher's film, and a variety of study cards on which students can record information they collect on their own neighborhoods. While the teaching materials are designed for use in grades 4-6, an imaginative teacher could use the films to provide the basis for discussion and study for any age group.

In Massachusetts, the Twenty-One Inch Classroom will include the films in its schedule of television programs for schools. The films and accompanying materials can be rented or purchased through the National Instructional Television Center, Box A, Bloomington, Indiana 40741. Further information can also be obtained from the HUD regional office in Boston and from the Twenty-One Inch Classroom.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MUSEUMS

BLUE HILLS TRAILSIDE MUSEUM

1904 Canton Avenue
Milton, Massachusetts 02186
Tel: (617) 333-0690

Robert Stanhope, Director

Operated by the Boston Zoological Society for the Metropolitan District Commission, the Blue Hills Trailside Museum offers both indoor and outdoor opportunities for the study of natural history. The museum itself contains displays of plants, geological materials and fossils, fish, reptiles and amphibians, insects, small animals, birds, and Indian history. The surrounding grounds include nature trails and a variety of animals, birds, and flowers.

Schools can arrange with the museum staff to bring student groups to the museum for general tours or for the study of specific topics. Members of the staff are available to plan appropriate individual programs with teachers and to carry out such programs with students.

CHILDREN'S MUSEUM

The Jamaicaway
Boston, Massachusetts 02130
Tel: (617) 522-4800

Marion Carey, School Services

The offerings of the Children's Museum are particularly designed for pre-school through elementary school children. As one part of its total program, the Museum has initiated what is to be a changing series of exhibits on issues related to the environment such as overpopulation, the effects of garbage and trash accumulation, and the contents of commercial detergents. During the school year, the Museum is open in the mornings for student groups starting at the second grade. Group visits must

be prearranged with the Museum staff. In the afternoons from 2-5 p.m., the Museum is open to the public. Admission for children is 75¢ and for adults, $1.25.

Elementary school teachers and curriculum planners should know about the Museum's Loan Department and its Workshop of Things. Through the Loan Department, schools can borrow MATCH boxes and Loan Boxes of multi-media curriculum materials, some of which deal with natural history and ecology. Live animals — guinea pigs, turtles, and a rabbit — can also be borrowed for classroom use.

The Workshop of Things is a Museum service providing a demonstration collection of curriculum materials, many of which are pertinent to environmental education, through which teachers can browse for new ideas and instructional materials. Starting in October, 1970, this service will also offer workshops on the use of materials.

As part of Boston's 1970 Summerthing, the Museum staff prepared a truck containing resource materials to help city children discover things about their environment. This "Earthmobile" rotated through eight sections of the city, spending a week in each neighborhood and conducting activities for whoever showed up at the site. Most of the children who participated were between the ages of five and fifteen. The "Earthmobile" staff consisted of six to seven people. They worked with groups of children to aid them in exploring areas in their immediate neighborhoods.

FRANKLIN PARK CHILDREN'S ZOO

Franklin Park
Blue Hill Avenue
Dorchester, Massachusetts 02121
Tel: (617) 442-2216

Paul McCormack, Director of Education

Like the Blue Hills Trailside Museum, the Franklin Park Children's Zoo is managed by the Boston Zoological Society for the Metropolitan District Commission. The programs and exhibits of the Children's Zoo are particularly geared for preschool and elementary school aged children who live in the ur-

ban area. At the Zoo, as individual visitors or as members of visiting groups, children have an opportunity to examine, touch, and feed the animals and learn about animal habits.

Now the Zoo is expanding its programs to reach into the community as well. Upon arrangement with schools and other organizations, the staff brings its Zoomobile into a neighborhood or classroom to present animal demonstrations and discuss wild-life with children. The content of these demonstrations depends upon the audience's age and interests, but basic to them all is the opportunity for children — especially city children who often have little contact with live animals — to touch the animals and ask questions about them.

MUSEUM OF SCIENCE, BOSTON

Science Park
Boston, Massachusetts 02114
Tel: (617) 742-1410

Edward D. Pearce, II, Director of Education
Rodney Mansfield, Assistant Director/Program
Ray Blake, Assistant Director/Group Visits

The museum offers several services of interest to students and teachers of ecology and environmental sciences. Many of the exhibits are ecologically oriented. There are, for example, seven life-size dioramas replicating life zones in New England including a salt marsh, a deciduous forest, and a rocky coastal shore; many miniature dioramas depict natural settings around the world. Two six-foot high cross-section models of forest soil show variations in soil life in summer and winter. Special programs such as live animal demonstrations for elementary school children and microscopic life presentations for older students can be prearranged with the museum staff.

The museum's general science library has a growing collection of materials in ecology. Museum visitors can use the library; and, though only members can borrow books directly, the museum participates in an inter-library loan system that permits non-members to obtain museum books through many local public libraries. A reference file of articles and additional information on most exhibits in the museum is also available,

and the staff is there to assist people in locating information regarding curriculum development.

Any Massachusetts school group can visit the museum free of charge providing prior reservations are made; teachers with proper identification are admitted free at any time. Brochures on school and group visits and on the museum's winter and summer courses offered for pre-school through high school age students can be obtained upon request.

NEW ENGLAND AQUARIUM

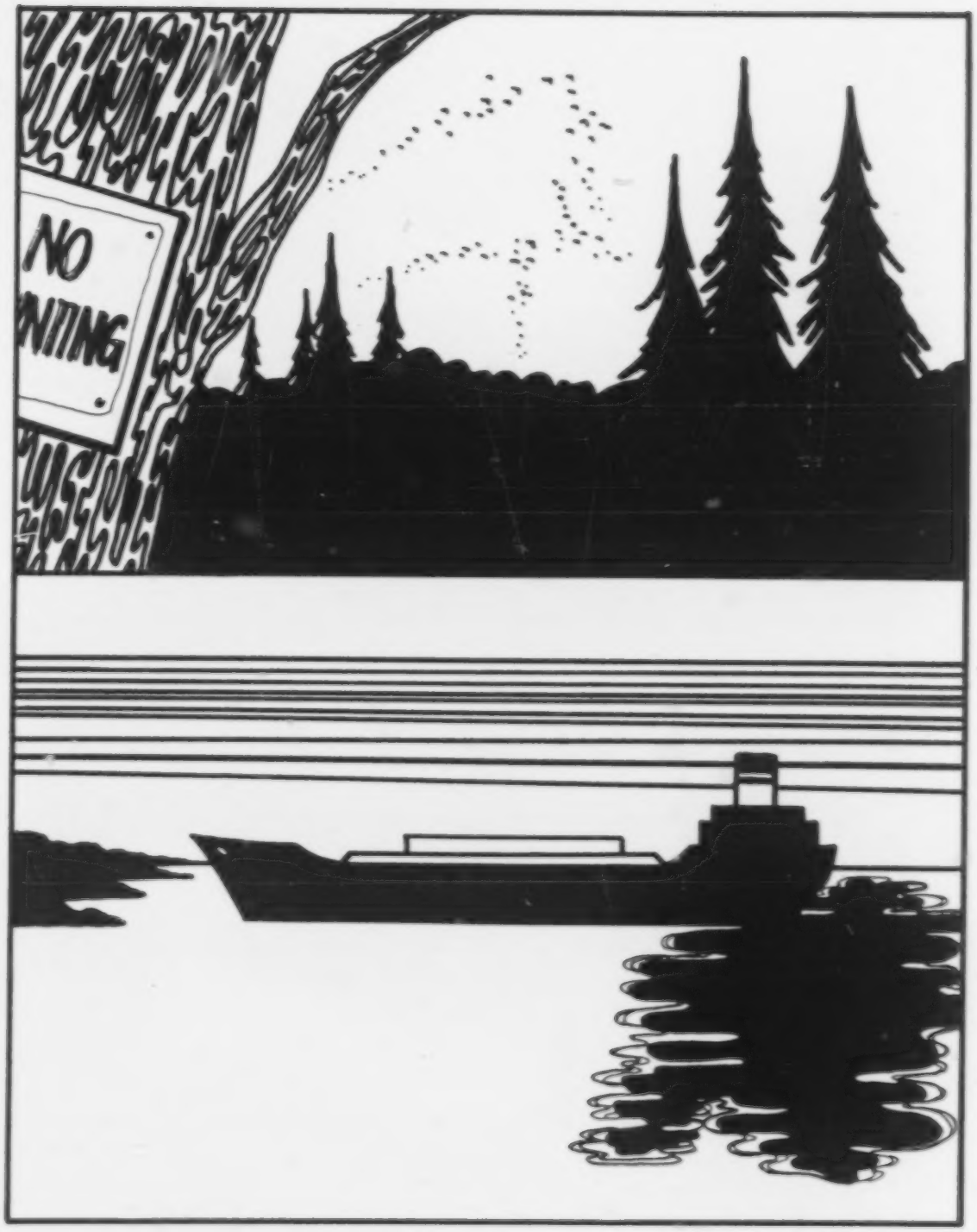
Central Wharf
Boston, Massachusetts 02110
Tel: (617) 742-8830

Carlo A. Mosca, Director, Education

The Aquarium's education department is developing educational programs that will augment the students' in-school curricula. Some of these programs, which will include such topics as fish sounds, coloration, and water quality, have direct ecological significance. In the fall of 1970, teachers planning to bring groups to the Aquarium will be able to request programs appropriate for the age level and interests of their classes.

Prior to class visits, teachers are encouraged to participate in the orientation seminars conducted at the Aquarium. These previews serve both to acquaint teachers with the facility and to assist them in developing new ways of using the Aquarium's educational resources so that their class visits can be fruitful.

Members of the Aquarium staff are also available to suggest supplementary resources to teachers and students interested in locating information and educational materials on aquatic life.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HUNTING

CITIZEN ACTION GROUPS AND CLUBS

The organizations reviewed in this chapter constitute only a representative list of some of the more active groups in Massachusetts. In recent months, there has been a sharp increase, not only in the membership of existing conservation and environmental groups, but also in the number of such groups themselves. New action and issue-oriented organizations are forming rapidly at local, state, and national levels. It is impossible to list them all.

The distinctions between citizen action groups and clubs and professional organizations suggested here is a loose one at best. Many citizen groups are highly professional in their activities and some are directed by full-time professional staff. On the other hand, some of the groups listed in this publication as professional organizations rely heavily upon the services and financial support of volunteers. Basically, those groups with large numbers of active members or with grass roots origins have been placed in this chapter; those groups that are not membership organizations or whose activities and memberships tend to be more professionally determined have been classified as professional organizations. In any case, the groups described in this publication suggest the variety of environmental concerns that people are addressing; hopefully, educators will find some of these groups useful to them and their students.

APPALACHIAN MOUNTAIN CLUB

5 Joy Street
Boston, Massachusetts 02108
Tel: (617) 523-0636

C. Francis Belcher, Executive Director

The club's primary interest is in the enjoyment and use of the mountains. For its members, the club offers field trips and educational programs in mountaineering and canoeing as well as camps where member families and their friends can enroll for nature study and other outdoor experiences.

In addition, the club provides several services for the general public. It maintains huts, shelters, and trails throughout the

White Mountains. It publishes a variety of field guides, trail guides, and canoeing guides including the *White Mountain Guide Book* and offers reprints of articles on ecological issues affecting mountains and waters. The club also operates Mountain Leadership Workshops in which counselors, youth leaders, and teachers receive four days of intensive leadership training. For the past three years, the club has sponsored some of these workshops specifically for youth leaders from the inner city. Since the club's staff is small, workshop participants are encouraged to conduct similar training programs in their own communities to maximize the spread of leadership skills.

BOSTON AREA ECOLOGY ACTION

925 Massachusetts Avenue
Cambridge, Massachusetts 02139
Tel: (617) 876-7085

David Grebow
John McGrain
Cindy Sampson

The Boston Area Ecology Action is an organization of volunteers, most of whom are young people living in the metropolitan Boston area. Its services and facilities are open to anyone concerned with ecological issues. The group is involved in a wide spectrum of activities aimed at helping people to better understand and to improve the relationships between man and the earth's resources. It gathers and disseminates information, sponsors educational programs and seminars, and organizes action projects. While it is deeply involved in political action, it is equally interested in the development of individual life styles that are in harmony with the natural environment.

The organization provides opportunities for education and for participation in issues ranging from the supersonic transport to organic gardening, from water pollution and mass transportation to recycling useful materials and conserving dying species of wildlife. Its Information Center contains a growing library of information on environmental problems. Its Action Center serves as a rallying place for people interested in public and political activity. Through its members and affiliates, Ecology Action provides other organizations with speakers, resource materials, and technical assistance in starting research and action on specific issues.

CITIZENS FOR PARTICIPATION POLITICS (CPP)

Environmental Problems Committee
11 South Street
Boston, Massachusetts 02111
Tel: (617) 426-3040

Catherine Meyer, Committee Chairman

The Environmental Problems Committee of CPP is a volunteer group that started in May, 1969, to investigate and provide voters with information on environmental legislation and the voting records of political candidates. Its activities now have expanded to include broader political pressure in fighting pollution. The Committee supports anti-pollution legislation and files appropriate bills in the Massachusetts legislature. It recently initiated a petition against the supersonic transport and for increased government expenditure on mass transportation facilities.

One of its major activities is in supplying the public with pollution complaint forms. These poet cards enable individuals to report what they suspect to be abuses of the environment. When completed cards are returned to the Committee, they are forwarded to the appropriate government agencies and to the state legislators representing those who have filed the complaints. Thus, the complaint cards serve both as spurs to government agencies to investigate and act against violations and as tools in lobbying for more stringent pollution legislation. The committee is seeking volunteers to canvas neighborhoods, distribute complaint cards, and process the cards as they return. High school students are welcome to jcin in this work.

CITIZENS LEAGUE AGAINST THE SONIC BOOM

19 Appleton Street
Cambridge, Massachusetts 02138
Tel: (617) 876-0764

William Shurcliff, Director

The purpose of this organization is to mobilize public opposition to the development and production of the supersonic transport plane because of its sonic boom. This it does by supplying information to its members and addressing the general public through radio, television, and newspapers. Its publications in-

clude a newsletter, a paperback book entitled *The S/S/T and Sonic Boom Handbook,* and various articles, analyses, and fact sheets that are available upon request.

Since the organization began in March, 1967, it has acquired 4,200 members from throughout the United States and from several foreign countries. Membership is open to anyone who wishes to join; there is no membership fee. The staff is entirely volunteer and donations are used to support the costs of publication and dissemination.

COALITION FOR ENVIRONMENTAL QUALITY (CEQ)

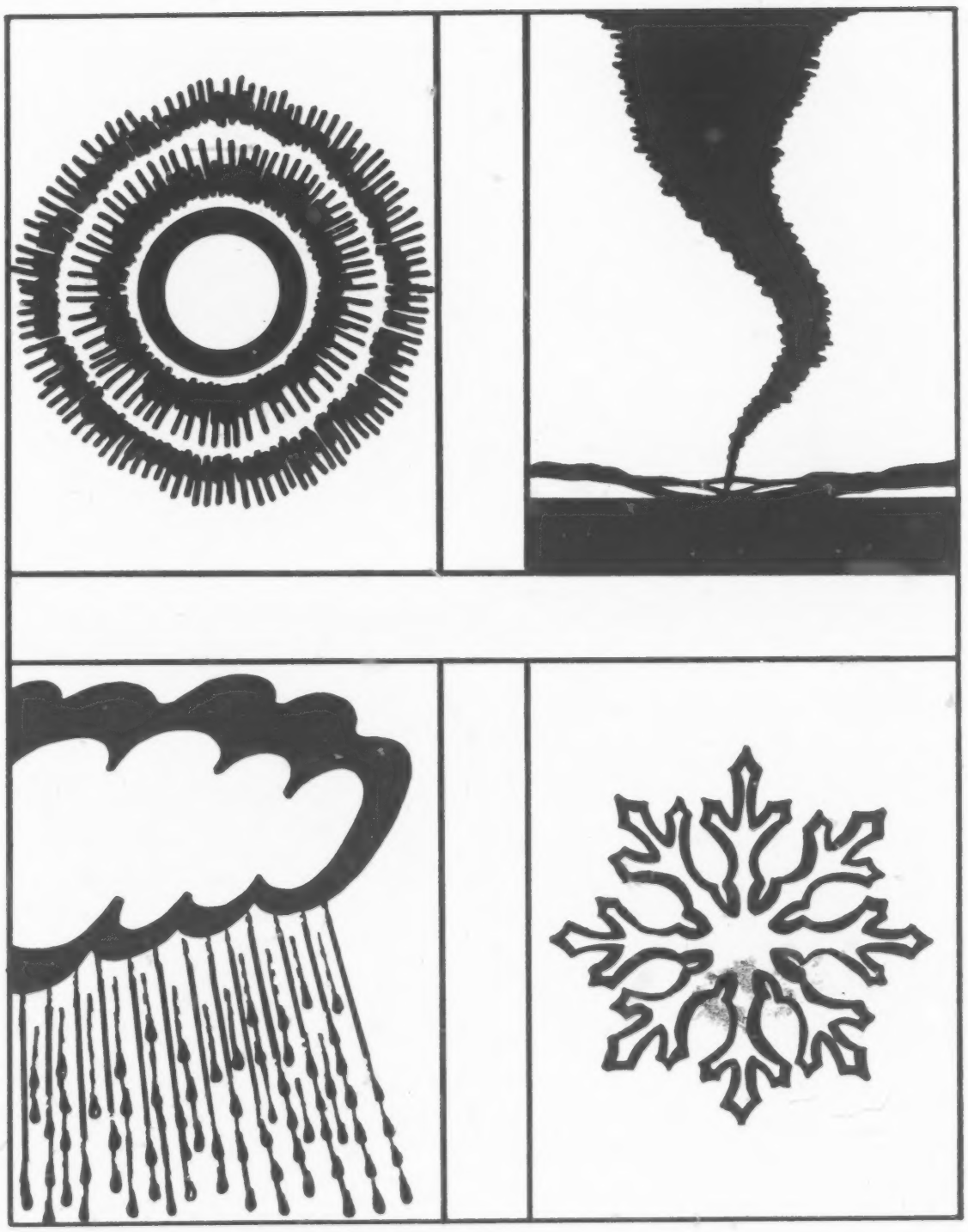
RSO #347
Campus Center
University of Massachusetts
Amherst, Massachusetts 01002
Tel: (413) 545-0618

Quinton Dawson, President

Based at the University of Massachusetts, the Coalition for Environmental Quality (CEQ) is a group of university students, faculty, and staff, closely allied with conservation and environmental organizations from throughout the Connecticut Valley. The group formed to promote education and constructive action on environmental issues; and, although it is new, it already offers several services that can be useful to teachers and students in western Massachusetts. Its members are eager to help high school students start ecology clubs and will work with students to assist them in getting organized and in locating information.

Speakers from the several colleges and universities in the region are available through CEQ to address school and community audiences on subjects related to ecology and the environment. CEQ also sponsors a public lecture series of distinguished ecologists at the University of Massachusetts; and, in cooperation with the Western Massachusetts branch of the Sierra Club, Friends of the Earth, and the Massachusetts Audobon Society, offers workshops in ecology.

Teachers who wish assistance in preparing for field trips, in finding materials, or in learning more about the resources in the area will find the Coalition for Environmental Quality a helpful contact.



IZAAK WALTON LEAGUE OF AMERICA: MASSACHUSETTS DIVISION

Eastern Branch
551 West Water Street
Rockland, Massachusetts 02370
Tel: (617) 878-4509

Frank Backoff, Director

Western Branch
P.O. Box 47
Ludlow, Massachusetts 01056
Tel: (413) 583-4049

Richard LeBoeuf, Director

Started in 1922, the Izaak Walton League of America is a national organization with a network of state divisions and local chapters. Its purpose is to encourage the protection and wise management of the soil, forests, water, wildlife, and other natural resources. This it does by registering its views and recommendations on natural resource conservation issues at all levels of government, by providing both educational services and activities in which its members may participate, and by working with other agencies and citizen groups to develop plans for meeting local conservation problems. Its publications include articles, position papers, and a monthly national magazine.

THE LEAGUE OF WOMEN VOTERS OF MASSACHUSETTS

120 Boylston Street
Boston, Massachusetts 02116
Tel: (617) 357-8380

Mrs. James Fegan, Environmental Quality Chairman

Its extensive experience in studying political issues and influencing legislation makes the League a potentially valuable resource for schools and community groups. In Massachusetts, the League's Water Resources Committee has had a long-term interest in all types of water pollution. Its studies have resulted in several publications, available on request, that include *Population Plus Production Equals Pollution, The Charles River: A Guide for Concerned Citizens about Its Future, Who Pays for a*

Clean Stream — a delineation of the cost of anti-pollution measures — and *Where Rivers Meet the Sea* — an analysis of estuarine areas. On the national level, the League's Education Fund has published *The Big Water Fight,* an excellent reference on how some citizen groups have organized to act against pollution and what tactics other groups might adopt.

This year, the League is also studying air pollution. The 1250 local Leagues throughout the United States will be participating, considering both local problems and national implications. In February, 1971, the League will have formulated its position on various aspects of the issue and will initiate an action program for carrying out recommendations developed during the period of study. Other groups are free to make use of the League's research and to join in the resultant activities.

The primary purpose of the League, however, is to mobilize political action; and, on the issue of pollution, Massachusetts Leaque members have been working at local and state levels. Local League groups throughout the state have members who are prepared to come into the classroom to discuss local water problems, local resource planning, and the strengths and weaknesses of existing legislation; some bring slide presentations as well. All local groups have members who are ready to meet formally or informally with students to talk about strategies for political action and to advise them on researching pollution problems and campaigning for change.

METROPOLITAN BOSTON CITIZENS COALITION FOR CLEANER AIR

c/o Massachusetts Tuberculosis and Respiratory Disease League
131 Clarendon Street
Boston, Massachusetts 02116
Tel: (617) 267-6850

Paul Brountas, Chairman
Donna Bodley, Secretary

Serving as a federation of volunteer organizations and individuals, the Coalition started in 1969 to mobilize citizen participation in the Air Quality Act public hearings. It now continues to coordinate activities aimed at strengthening anti-pollution regulations, to press government agencies to adopt measures that will improve the quality of air in the metropolitan Boston

area, and to provide the public, including the schools, with information on air quality standards.

SAVE OUR SHORES

P.O. Box 103
North Quincy, Massachusetts 02171
Tel: (617) 472-5510

Mrs. Nelson Saphir, Project Chairman

Officially the Dorchester Bay — Boston Harbor and Islands Project, this organization is commonly known by its slogan: "Save Our Shores." Its purpose is to preserve the Boston Harbor, the foreshore mainland, the harbor waterways, and the thirty harbor islands as a national historic site for aesthetic, historical, and recreational use. The members of this private organization of concerned citizens are eager to discuss the value and the use of the harbor with interested groups and will send speakers to classes and clubs for students at any grade level.

THE SIERRA CLUB

New England Chapter
373 Huron Avenue
Cambridge, Massachusetts 02138
Tel: (617) 868-9330

Roger Marshall, Chairman

Eastern Massachusetts Group
373 Huron Avenue
Cambridge, Massachusetts 02138
Tel: (617) 868-9330

Irene Blanchard, Chairman

Western Massachusetts Group
Hampshire House
University of Massachusetts
Amherst, Massachusetts 01002
Tel: (413) 545-0111

Stanley Mikelk, Chairman

The New England Chapter of this national conservation organization is a new and rapidly growing group interested in enjoying the outdoors and in acting politically to improve the envi-

ronment and preserve wilderness and other natural resources. In addition to joining in hiking, bicycling, and camping trips, its members work in study groups and task forces on such topics as pesticides, population, pollution of all kinds, power supplies, the super sonic transport, transportation, and highway construction. A particular concern of the Eastern Massachusetts Group is the improvement of Boston Harbor and its islands.

The Sierra Club provides its members with opportunities for recreation, education, and constructive action to curb destruction of the environment. The New England Chapter publishes a monthly newsletter and holds monthly meetings that are open to the public. On the national level, the Club publishes an excellent series of books and magazines.

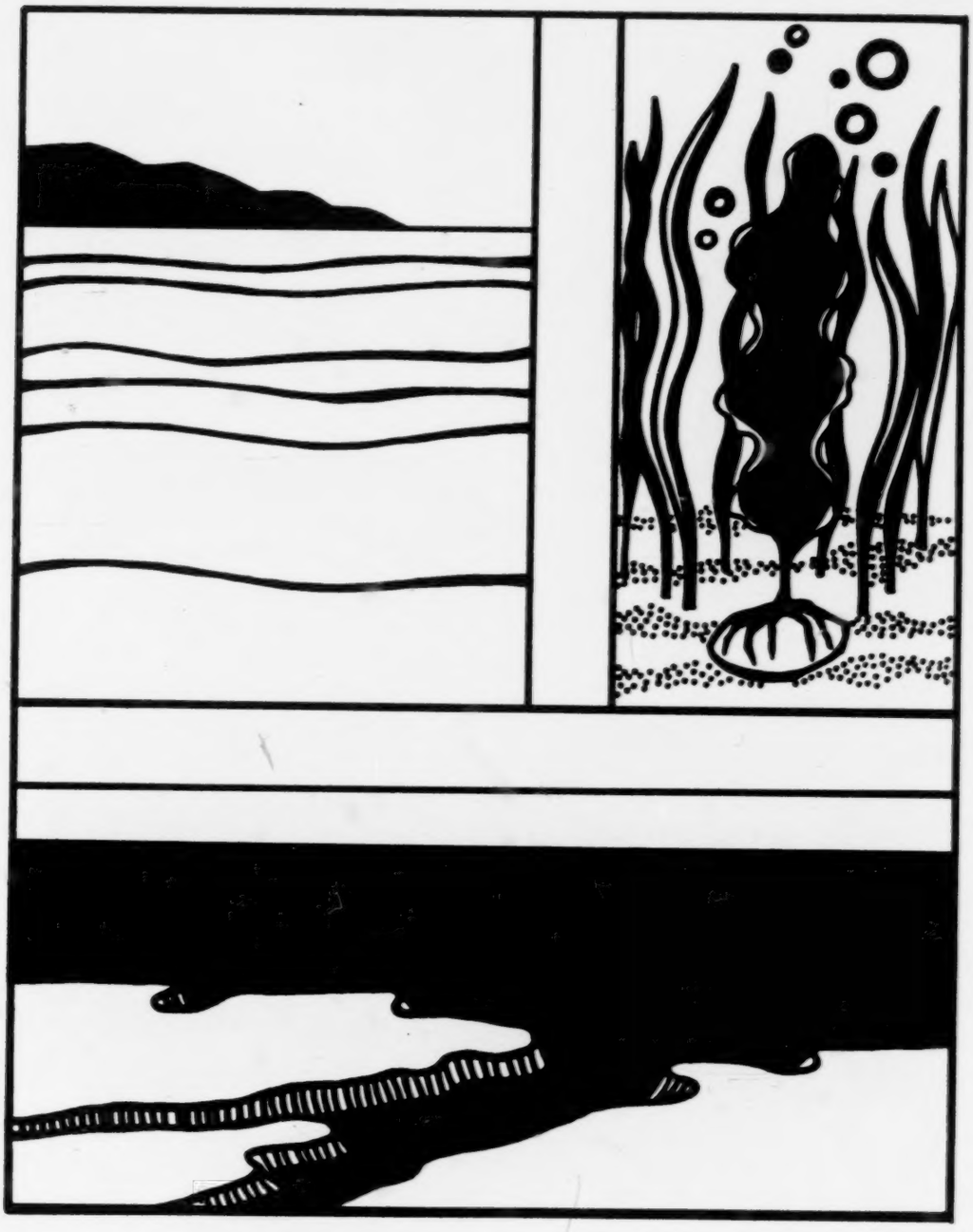
ZERO POPULATION GROWTH

ZPG Massachusetts Chapter
14 Beacon Street
Boston, Massachusetts 02108
Tel: (617) 523-2771

Richard Cramer, Chapter President

A newly-formed national organization establishing local chapters throughout the country, ZPG's purpose is to bring the necessity for curbing population growth to the attention of the public through disseminating information, lobbying for legislation, and supporting political candidates. While population expansion in the United States will have long range effects upon our natural resources, ZPG stresses the immediate and short range contribution of increased population to our social and economic problems and particularly to pollution.

The Massachusetts Chapter is particularly interested in reaching high school students and offers several services to the schools. It can furnish them with speakers on a variety of issues related to population expansion and control. It distributes a bibliography on population problems and fact sheets for teachers that outline information on such topics as the social problems created by over-population and the economic benefits of small families and stable population. The local chapter's monthly newsletter is available for $1.00 per year. Membership in the national organization, which includes local membership and a subscription to the national newsletter, is $4.00 for schools and students and $10.00 for adults.



PROFESSIONAL ORGANIZATIONS

BERKSHIRE NATURAL RESOURCES COUNCIL, INC.

48 Eagle Street
Pittsfield, Massachusetts 01201
Tel: (413) 499-0596

George S. Wislocki, Executive Director

The Berkshire Natural Resources Council, Inc. is a non-profit, tax-exempt organization supported by 300 individual and 30 corporate members. Although the Council's broad charter permits activity in many aspects of environmental quality pertinent to Berkshire County, the organization's primary interest at present is in the acquisition and preservation of open-space and the development of recreation areas. It works with many public and private groups throughout the county, helping to stimulate interest in land conservation and assisting cities and towns in obtaining federal and state funds for local land acquisition and parklands development. The Council has recently initiated the Berkshire County Land Trust and Conservation Fund, a non-profit land holding trust that preserves property it receives by donation and bequest.

Teachers in Berkshire County schools can call upon the Council for advice about natural areas to use as compact teaching sites for conservation and ecological study, and the director of the Council is available to discuss natural resource planning with student groups and to suggest projects and strategies for student action.

BOSTON ENVIRONMENT, INC.

14 Beacon Street
Boston, Massachusetts 02108
Tel: (617) 227-2669

John W. Putnam, Executive Officer

Boston Environment, Inc. is concerned with the many issues that impinge on the current environmental crisis. Its activities include organizing and communicating information as well as counseling other organizations, members of government and individual citizens. Its particular emphasis is upon promoting

public concern and public action that will lead to attitude, priority, and policy changes necessary for maintaining a healthy environment in our technological society.

The organization keeps members of government informed about ecological issues and their legislative implications; reviews newspapers, magazines, and other publications for current articles of interest; brings together people who can aid each other in taking action for environmental improvement; keeps in touch with the activities of other ecology and conservation groups in the state; and provides advice and information to individuals and local groups, including schools, interested in learning more about certain issues and in planning programs of action.

It maintains up-to-date information files in its office and in the Environmental Information Center at the State House. It attempts to reach the general public through a weekly radio program and frequent newspaper bulletins. The Environmental Hot Line, which often appears in the Boston Globe offering a list of agencies that private citizens can call to report environmental abuses, was prepared by Boston Environment, Inc.

A non-profit organization, it relies heavily on volunteers whose activities range from clipping articles for the information files, delivering information to and acting as aides to state legislators, to researching and reporting on pertinent environmental issues.

CONSERVATION LAW FOUNDATION, INC.

506 Statler Office Building
Boston, Massachusetts 02116
Tel: (617) 542-0351

Benjamin W. Nason, General Counsel
Oakes Plimpton, Acting Executive Director

The Foundation is a valuable resource for groups and individuals throughout New England that are seeking advice or assistance with legal problems in any aspect of conservation or land use. Its staff is available to help with specialized legal issues or simply to give interested citizens information on laws pertinent to conservation. Activities of the Foundation also include interpreting and reviewing conservation legislation and

court decisions and conducting research to improve procedures and to design model laws for better protecting the environment. Its quarterly publication, *Conservation Law Notes,* presents legal aspects of conservation issues for the New England region and is distributed to its members and associates. Through an arrangement with the Metropolitan Area Planning Council, the Foundation is currently distributing the MAPC's *Massachusetts Open Space Law* to the public for $5.00 per copy. In the coming months it plans to publish a series of pamphlets on other facets of Massachusetts protective law.

MASSACHUSETTS ASSOCIATION OF CONSERVATION COMMISSIONS

84 State Street
Boston, Massachusetts 02109
Tel: (617) 742-9310

Stuart DeBard, Executive Secretary

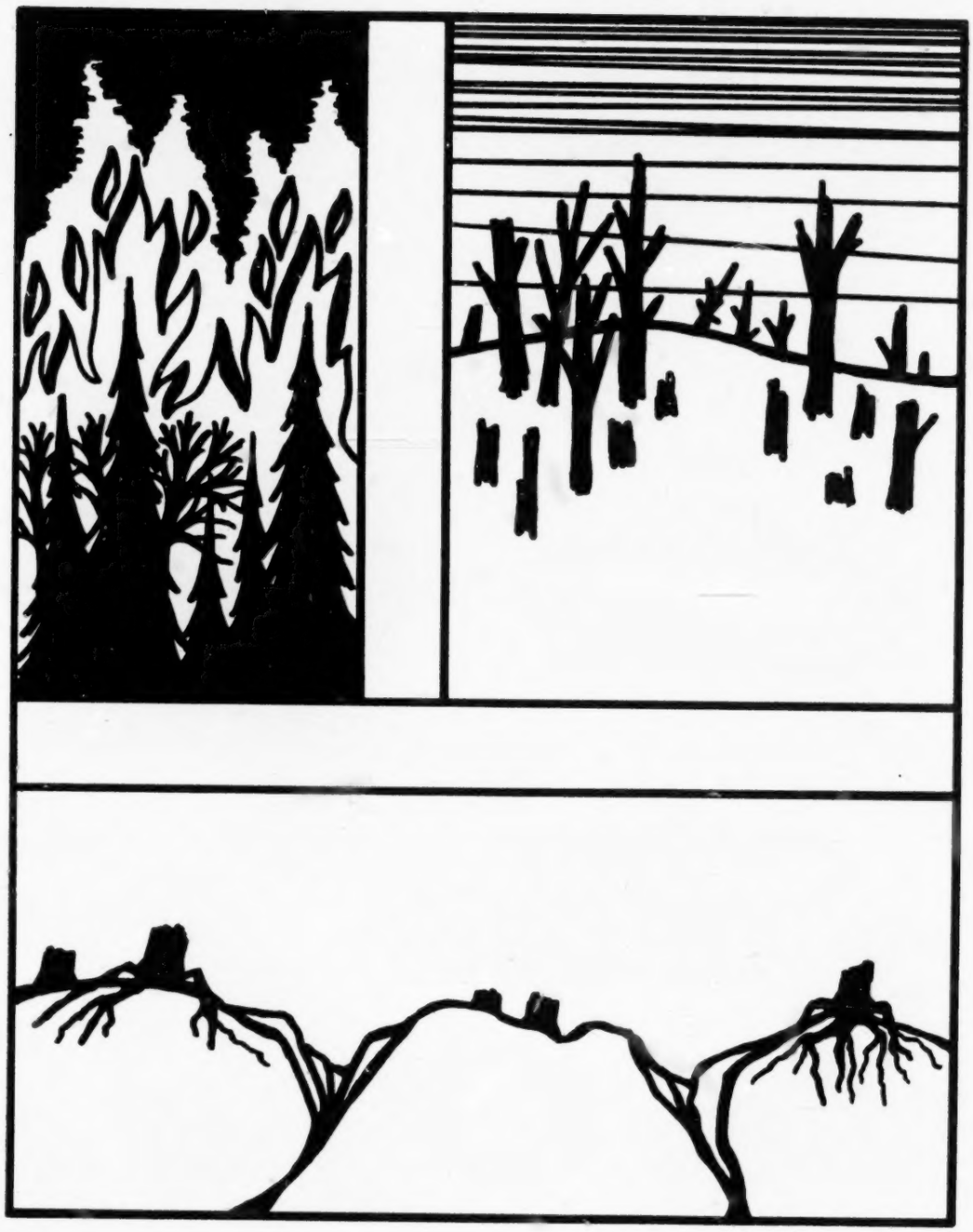
Many cities and towns in Massachusetts have official Conservation Commissions that work to develop and protect local natural resources. The Massachusetts Association of Conservation Commissions coordinates these local groups throughout the state, providing them with advice and information on legislation and on the activities and services of government agencies and other organizations. It also disseminates news about local commission efforts and publishes the *Conservation Commission Handbook* in cooperation with the Massachusetts Department of Natural Resources. The Association also sponsors lectures, forums, and conferences and assists cities and towns in establishing local Conservation Commissions.

MASSACHUSETTS FOREST AND PARK ASSOCIATION

1 Court Street
Boston, Massachusetts 02108
Tel: (617) 742-2553

Benjamin W Nason, Executive Director

The Association is the legislative arm of the Conservation movement in Massachusetts, having sacrificed its tax-free status so that it could engage in active lobbying. Because of their tax-free status as charitable organizations, most conservation groups are prohibited by law from active lobbying, so the Massachu-



setts Forest and Park Association (MFPA) stays on the firing line, keeping their interests in mind. MFPA introduces and follows through on legislation designed to protect natural resources, forests, parks, recreation areas, coastal and inland wetlands, and other natural scenery. It works at both state and local levels and offers assistance to other conservation groups in protecting the ecology of Massachusetts.

The organization follows all legislation under consideration on Beacon Hill. When legislation is introduced that has either positive or negative implications for conservation, the MFPA *Conservation Legislative Bulletin* goes swiftly to all members, alerting them about the legislation and suggesting action that they can take. The *Forest and Park News* is issued quarterly to all members and is of general interest to conservationists. From time to time, the Association publishes additional materials, and such materials are usually available to students and teachers upon request.

MASSACHUSETTS TUBERCULOSIS AND RESPIRATORY DISEASE LEAGUE

131 Clarendon Street
Boston, Massachusetts 02116
Tel: (617) 267-6850

Donna Bodley, Air Conservation Consultant

Educating the public about the relationship between air pollution and health is the primary concern of the League. Through its state office in Boston and any of its fifteen local branches throughout the state, one can obtain information on various aspects of the air pollution problem, including literature, films and film strips, bibliographies, and access to a complete catalogue of U.S. Department of Public Health publications relevant to pollution. Local Associations distribute a 104-page paperback book published by the National Tuberculosis and Respiratory Disease Association entitled *The Air Pollution Primer* and other booklets and pamphlets prepared by the national and the state League as part of the organization's public information program.

The Tuberculosis and Respiratory Disease Associations can help school groups and individuals select materials appropriate

to their educational needs. In the near future, the League is establishing its own resource library and hopes to sponsor research studies on the effects of air pollution.

PLANNED PARENTHOOD LEAGUE OF MASSACHUSETTS

229 Berkeley Street
Boston, Massachusetts 02116
Tel: (617) 536-8790

Mrs. Thayer Williams

One of over 150 affiliates of Planned Parenthood-World Population, the Planned Parenthood League of Massachusetts seeks to increase public awareness of the dangers of overpopulation and to encourage conditions that enable family planning. The League offers a broad spectrum of services to groups and individuals including counseling on family planning; training for nurses, social workers, and health educators concerned with family planning and population control; subsidizing individuals who lack funds for medical care; and assisting schools in developing sex education programs.

The League is also active in disseminating information to the public. Educators and students can make use of its library of books and materials on all aspects of population and family planning. The League also supplies reprints of timely articles, original publications, a film list, and bibliographies for many age groups and audiences on a variety of topics related to population control and the economic and social implications of overpopulation.

THE TRUSTEES OF RESERVATIONS

224 Adams Street
Milton, Massachusetts 02186
Tel: (617) 698-2066

Gordon Abbott, Jr., Director
Garret F. VanWart, Deputy Director

The Trustees of Reservations is a charitable corporation founded in 1891 "for the purpose of acquiring, holding, arranging, maintaining, and opening to the public under suitable regu-

lations, beautiful and historic places and tracts of land" within the Commonwealth of Massachusetts. The organization is concerned with special features of the Massachusetts landscape; its natural history, wildlife, plant life, geology, and ecology.

At present, there are fifty natural areas and historic sites operated by the Trustees. They stretch from the Berkshire Hills to Cape Cod and the Islands, totaling some 10,500 acres of diverse land. Interpretive programs at some of these reservations have been started in recent years. There is a dune restoration program and a self-guiding trail walk at the Crane Reservation in Ipswich, a boardwalk and bog nature trail at the Ward Reservation in Andover, and a demonstration forestry and wildlife management program at the Notchview Reservation in Windsor.

Currently the Trustees are developing master plans to prepare for the future use and management of each reservation. Inventories of the physical and biological characteristics of the lands, information on local zoning laws and recreation needs, and survey data on visitor reactions are part of the in-puts for preparation of the master plans. Some of these site studies can be carried out by young people, offering them not only interesting educational experiences but also opportunities to see their efforts have useful consequences. Well-conducted student studies, therefore, would be more than academic exercises; they would be used by the organization as source material for planning the future of the reservations.

Some students have already become involved in site studies. A group of Saugus High School students and a Saugus High School teacher have undertaken a thorough investigation of a tern colony at the Crane Reservation in Ipswich and are developing a plan to ensure the continued protection of these birds. Students in the Ipswich schools have been working with the organization at this same reservation, planting beach grass and other vegetation to stabilize the sand dunes. The kinds of projects that students undertake depend upon the type of reservation in their geographic area and their own skills, interests, and leadership.

The Trustees of Reservations publishes a booklet describing the location and characteristics of each site. More information on ways in which students might participate as conservation volunteers can be obtained from the organization's headquarters in Milton.

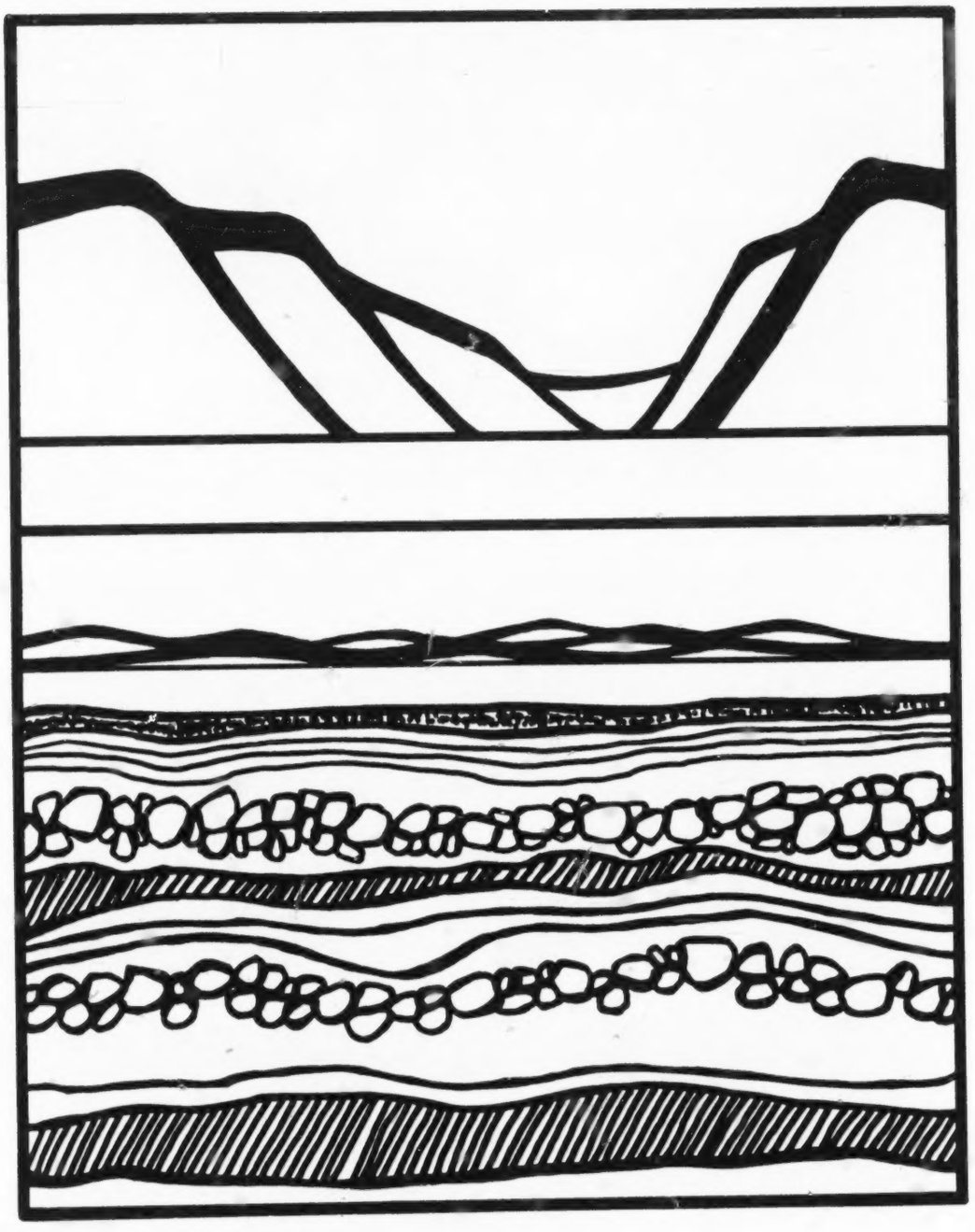
UNION OF CONCERNED SCIENTISTS

P.O. Box 289
MIT Station
Cambridge, Massachusetts 02139
Tel: (617) 864-6900 Ext. 7032

James MacKenzie, Chairman

The Environmental Pollution Committee of the Union of Concerned Scientists includes approximately 125 scientists, engineers, economists, and lawyers from the Boston area. The Committee and its several subcommittees on specific issues serve as advocates for consumer protection and foster scientific and technical studies of environmental problems. Individually and collectively, members report their findings, opinions, and recommendations to legislative bodies, governmental and non-governmental agencies and citizen groups.

The Committee also operates a Speaker's Bureau. Schools can request professionals in various fields to speak to groups from the sixth grade through high school on topics such as pesticides, transportation, and other aspects of environmental concern.



GOVERNMENT AGENCIES

State Resources

MASSACHUSETTS DEPARTMENT OF EDUCATION

182 Tremont Street
Boston, Massachusetts 02111
Tel: (617) 727-5746

Raymond Gehling, Jr., Senior Supervisor, Conservation Education

Within the Bureau of Elementary and Secondary Education of the Massachusetts Department of Education there are two education supervisors who serve as conservation education specialists. Their function is to assist schools in bringing environmental education into the curriculum. Upon request, they conduct training sessions for elementary and secondary school teachers on ways of using the school grounds and nearby sites for outdoor study. The emphasis of these workshops is upon the use of local resources; they attempt to demonstrate to educators that environmental instruction need not depend upon unusual sites or elaborate field trips, that the basic ingredients for understanding the environment can be found close at hand and can be incorporated into the curriculum without great difficulty if teachers themselves are interested.

Teachers, curriculum planners, administrators, and students can contact the conservation education specialists for help in locating materials, films, books, and other resources suitable to their needs. Although the Department of Education does not have a library of materials on environmental education, it does furnish bibliographies in the field.

The staff can also assist in developing strategies for initiating environmental education activities in the schools. To provide impetus, particularly to those schools that do not yet include environmental studies in their curricula, the Department is supervising the preparation of a *Curriculum Guide in Environmental Education*. Several Massachusetts educators who are leaders in the field of conservation and environmental education are currently involved in the writing of this guide. When it is completed, schools will be notified and it will be made available to them.

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

100 Cambridge Street
Boston, Massachusetts 02202
Tel: (617) 727-3159

Evans C. Hawes, Assistant to the Commissioner (Planning and Research)

The several divisions within the Department have specific purposes and activities that relate to the protection and development of natural resources of Massachusetts and its adjacent waters. The Division of Forests and Parks manages nearly a quarter of a million acres of natural lands, including 87 parks with recreational facilities. The Division of Conservation Services works with organizations and individuals to conserve open space and wetland areas; this division, for example, coordinates activities of the fifteen Massachusetts Conservation Districts and 287 municipal Conservation Commissions. Other divisions include the Division of Law Enforcement, the Division of Marine Fisheries, the Division of Water Pollution Control, the Division of Water Resources, and the Division of Mineral Resources.

Because educators and students frequently call the Department for information on conservation and natural resources, the staff has assembled a collection of pamphlets published by various agencies within and outside the government. These materials cover such topics as water pollution, fish and game management, tide lands, plant life, forestry, and soil conservation. Single copies are available to teachers upon request.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Division of Environmental Health
Room 320
600 Washington Street
Boston, Massachusetts 02111
Tel: (617) 727-2690

John C. Collins, Director and Chief Engineer

Within the Division of Environmental Health are four bureaus responsible for providing technical assistance to other governmental units and local agencies and for adopting and enforc-

ing standards and regulations to protect the public from harmful factors in the environment. The Bureau of Air Use Management is principally concerned with air pollution and works with and through the several air pollution control districts being established throughout the state. The Bureau of Community Sanitation is concerned with ensuring that sewage disposal systems are not detrimental to health, that solid wastes are disposed of properly, and that recreational and farm labor camps are operated in a sanitary manner. The Bureau of Water Supply and Water Quality Control supervises drinking water and shellfish sanitation, and the new Bureau of Radiological Health serves to control sources of radioactivity. The research and analytical laboratory work for the entire Division is conducted at the Lawrence Experiment Station.

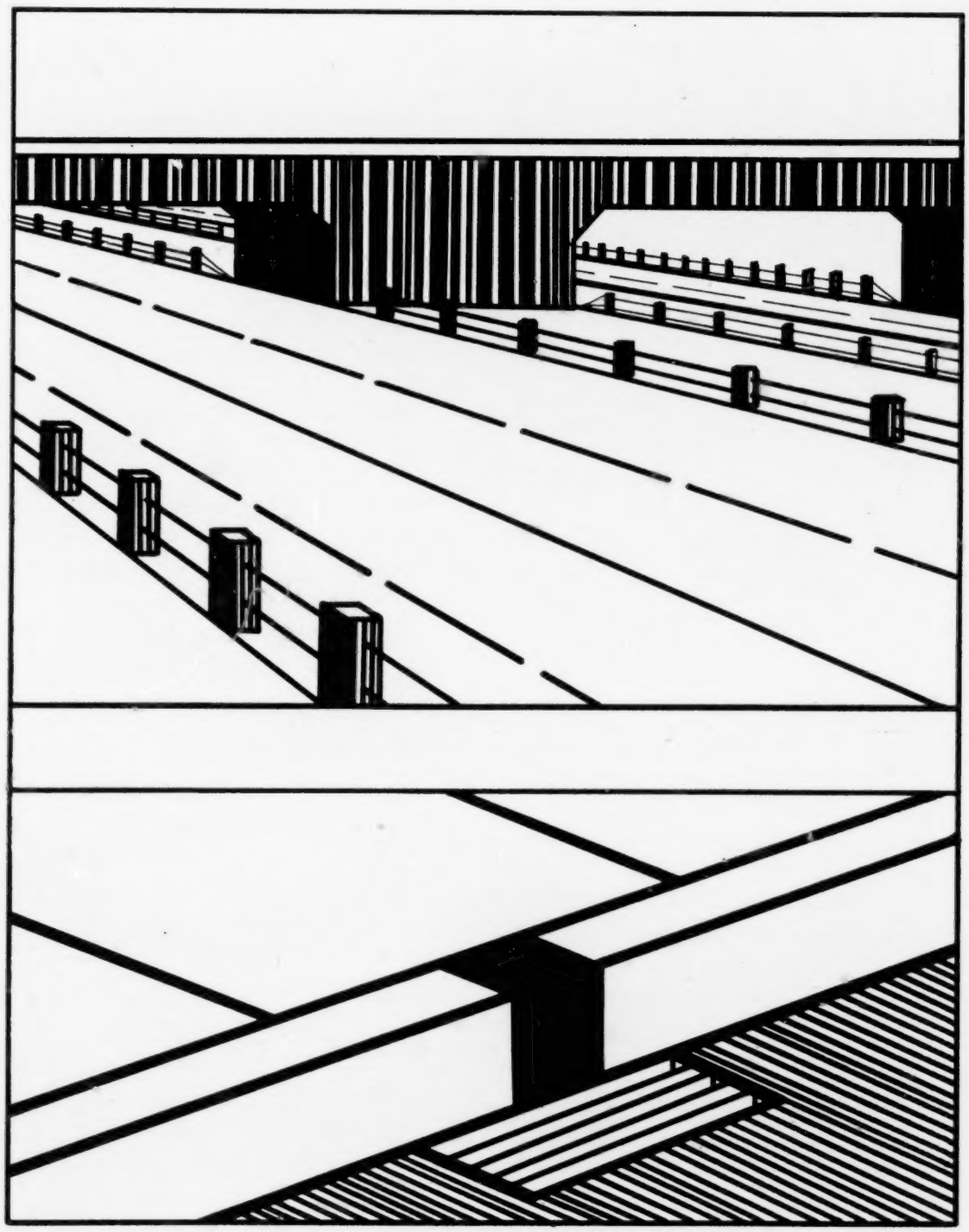
Student groups are welcome to tour the Experiment Station and most of the water filtration plants and sewage treatment plants throughout the state. Arrangements for such tours, as well as information on local sites that might be visited by classes studying various aspects of pollution, can be best obtained through the Division's district engineers located in the four district offices at the Tewksbury Hospital, the Lakeville Hospital, the Rutland Hospital, and the Western District Health Office at the University of Massachusetts. Through these offices, pamphlets and other materials can often be obtained as well.

MASSACHUSETTS DIVISION OF FISHERIES AND GAME

Information Education Office
Westboro Field Headquarters
Westboro, Massachusetts 01581
Tel: (617) 366-4470

Richard Cronin, Chief of Information Education

The Massachusetts Division of Fisheries and Game is a state agency supported solely from revenue received from issuing hunting and fishing licenses. It operates a central education and research office in Westboro where the technical staff of biologists conducts research on various aspects of fish and wildlife rearing, preservation, and management. Its four district offices are responsible for managing the Division's programs in the field.



Schools can arrange to bring class groups to tour the Division's fish hatcheries and game farms. There are five hatcheries located in Belchertown, East Sandwich, Montague, Palmer, and Sunderland; the newest, modern facility is the hatchery in Belchertown. Three game farms are located in Ayer, Sandwich, and Wilbraham.

Teachers and school librarians are urged to subscribe, at no charge, to the Division's magazine, *Massachusetts Wildlife*. This publication is particularly geared to educators, conservationists, sportsmen, and outdoorsmen and in coming months is to highlight some of the most successful programs conducted for the 1970 Earth Day. The Division's annual report, also available to schools, contains a review of its research and related activities conducted during the year. Abstracts of Massachusetts protective laws are provided by the Division through local town clerks' offices, and from time to time, other publications on fish and wildlife are issued.

Members of the staff accept a few speaking engagements with high school groups that want information on particular issues relative to fish and game management.

Regional Resources

MASSACHUSETTS CONSERVATION DISTRICTS

Fifteen conservation districts in Massachusetts provide information and technical assistance to communities, organizations, and individuals on soil, water, and related natural resource problems. The districts are each governed by an elected five-man board of supervisors and staffed by a team of professionals. Operating funds come largely from federal and state sources. The U.S. Department of Agriculture supports soil conservation specialists. Natural resource specialists, engineers, and other staff are supported by the Massachusetts Department of Natural Resources, Division of Conservation Services.

Activities of the districts differ somewhat according to local needs and interests, but many services are available through all of the districts. The staffs provide technical advice including site surveys, wildlife pond designs, recommendations for site devel-

opment and plantings in such areas as parks and school yards, and nature trail lay-outs.

For special projects, the districts can request additional funds from the Massachusetts Department of Natural Resources. In several districts, these special funds have been used to develop outdoor demonstration areas or environmental study rites for schools and community groups. The Gateway Regional School District and schools in Stow and Tyngsborough are among the several schools working with their local conservation districts on environmental study sites.

Local district personnel are in touch with other conservation groups in their area and often work with them on projects, so they are a good source of information on local resources and activities. They can often recommend local people who are knowledgeable in specific aspects of ecology and conservation and other groups for teachers and students to contact.

For many communities throughout the state, the local districts have prepared soil surveys and natural resource studies. These publications provide valuable information on local natural resources and potential field trip sites and could be useful to elementary and secondary teachers who wish to explore their town with their students. Some general conservation literature is also available through the districts.

Barnstable Conservation District
255 Main Street
Hyannis, Massachusetts 02601
Tel: (617) 775-1114

Berkshire Conservation District
126 Fenn Street
Pittsfield, Massachusetts 01201
Tel: (413) 443-1470

Bristol Conservation District
127 Taunton Street
Middleboro, Massachusetts 02346
Tel: (617) 947-0096

Dukes Conservation District
Vineyard Haven, Massachusetts 02568
Tel: (617) 693-1162

Essex Conservation District
Essex County Agricultural School
Hathorne, Massachusetts 01937
Tel: (617) 774-1619

Franklin Conservation District
13 Miles Street
Greenfield, Massachusetts 01301
Tel: (413) 774-4057

Hampden Conservation District
1499 Memorial Avenue
West Springfield, Massachusetts 01089
Tel: (413) 781-2420, Ext. 326

Hampshire Conservation District
8B Trumbull Road
Northampton, Massachusetts 01060
Tel: (413) 584-1815

Middlesex Conservation District
403 Massachusetts Avenue
Acton, Massachusetts 01720
Tel: (617) 263-2679

Nantucket Conservation District
Box 899
Nantucket, Massachusetts 02554
Tel: (617) 228-9403

Norfolk Conservation District
Norfolk County Agricultural High School
460 Main Street
Walpole, Massachusetts 02081
Tel: (617) 263-2679

Northeastern Worcester County
Conservation District
680 Main Street
Holden, Massachusetts 01520
Tel: (617) 829-5663

Northwestern Worcester County
Conservation District
680 Main Street
Holden, Massachusetts 01520
Tel: (617) 829-5663

Southern Worcester County Conservation
District
680 Main Street
Holden, Massachusetts 01520
Tel: (617) 829-5663

Plymouth Conservation District
127 Taunton Street
Middleboro, Massachusetts 02346
Tel: (617) 947-0096

METROPOLITAN AREA PLANNING COUNCIL

44 School Street
Boston, Massachusetts 02108
Tel: (617) 523-2454

Created by the Massachusetts Legislature in 1963, the Metropolitan Area Planning Council is the official regional planning agency for the Boston metropolitan area. Its membership includes 99 cities and towns. Its professional staff of planners, economists, lawyers, and designers is supported by assessment from member communities and governmental and private grants. This staff conducts research and prepares comprehensive plans for the physical, social, and economic improvement of the metropolitan area. Its concerns range from open space and recreation resources to housing, airport systems, water pollution, and solid waste disposal. The staff attempts to coordinate interagency action in implementing sound programs in these areas. It also provides technical assistance to communities within its membership in matters pertaining to local planning issues.

Most of the Council's reports are highly technical, but its four volume series on planning programs for open space and recreational purposes could be a useful high school curriculum re-

source. This series contains volumes on the Charles, Mystic, and Neponsit Rivers; Boston Harbor; open space use in urban districts; and Massachusetts Open Space Law.

METROPOLITAN DISTRICT COMMISSION

20 Somerset Street
Boston, Massachusetts 02108
Tel: (617) 727-5250

The Metropolitan District Commission was established by the Massachusetts Legislature to manage, on a regional basis, parks and public recreation areas, parkways, and water systems throughout metropolitan Boston. While the Commission itself does not operate educational programs directly, it does maintain six natural reservations and four zoos that can serve as field trip sites for student groups, MDC reservations include the Blue Hills Reservation, Middlesex Fells, Breakheart, Stony Brook, Beaver Brook, and the Newton-Brookline Waterlands. Two of the four zoos are operated for the Commission by the Boston Zoological Society and have active educational services. (See previous discussion of the Franklin Park Children's Zoo and the Blue Hills Trailside Museum.) The Franklin Park Zoo in Dorchester and the Stoneham Zoo at the Middlesex Fells Reservation are both open year-round to the public.

NEW ENGLAND RIVER BASINS COMMISSION

55 Court Street
Boston, Massachusetts 02108
Tel: (617) 223-6244

Serving the six New England states and New York state, the New England River Basins Commission (NERBC) was established in 1967 by President Johnson under authority of the Water Resources Planning Act of 1965. In accordance with the objectives of the Planning Act, NERBC constitutes a federal-state partnership, and acts as the principal agency in the northeast region providing leadership in broad coordination of water and related land use plans.

Commission members include representatives of federal, state, inter-state, local, and non-governmental organizations that have the power to implement programs and to enforce pollution laws. NERBC is responsible for developing comprehensive re-

gional plans for the use and development of water and related land resources; for sponsoring and supporting studies of such issues as water pollution, water supply, flood control, and power production as they apply to the region; and for recommending immediate and long-range priorities regarding problems and courses of action concerning the many facets of water resource use.

The Commission can be a good source of information, not only on specific aspects of New England water concerns, but also on the new programs and multi-level governmental alliances that are emerging now to deal with these concerns in the future. In addition to its reports, the Commission also publishes a regional newsletter.

Municipal Resources

Within individual cities and towns one can find a variety of public and private organizations that are involved with local environmental and conservation issues and offer information and services that can be helpful to the schools. Obviously, the availability of such resources will differ from community to community. Local municipal recreation, park, and planning departments usually provide good starting places for finding out more about local issues and for locating other concerned groups. Local Conservation Commissions, which operate in many Massachusetts cities and towns, provide another important source of information and assistance. Then, one can explore local garden clubs, citizen conservation groups, local chapters of the League of Women Voters, etc., for additional help.

While it is not feasible to review the many local organizations in this publication, two such groups are highlighted — local Conservation Commissions because they are active throughout the state, and the Cambridge Historical Commission because it is an unusual attempt by a city government to provide its residents with information on their environment.

LOCAL CONSERVATION COMMISSIONS

Municipal Conservation Commissions are the official agencies of cities and towns that serve to develop and protect local

natural resources. Commission members are appointed by the mayor, town or city manager, or board of selectmen. Their operating funds come from the municipal budget, from private donations; and, if they develop plans for the acquisition and management of local open space and recreation areas that are approved by the Massachusetts Department of Natural Resources, state funds may be obtained for partial reimbursement of the cost of such lands.

Information on community conservation projects and problems as well as on local sites that student groups might explore is available through these municipal Commissions.

Efforts of local Commissions are assisted by the Massachusetts Association of Conservation Commissions. The Association also helps communities to start get their own Commissions established.

CAMBRIDGE HISTORICAL COMMISSION

City Hall Annex
57 Inman Street
Cambridge, Massachusetts 02139
Tel: (617) 876-6800 X347

Amy Cohn, Staff Contact

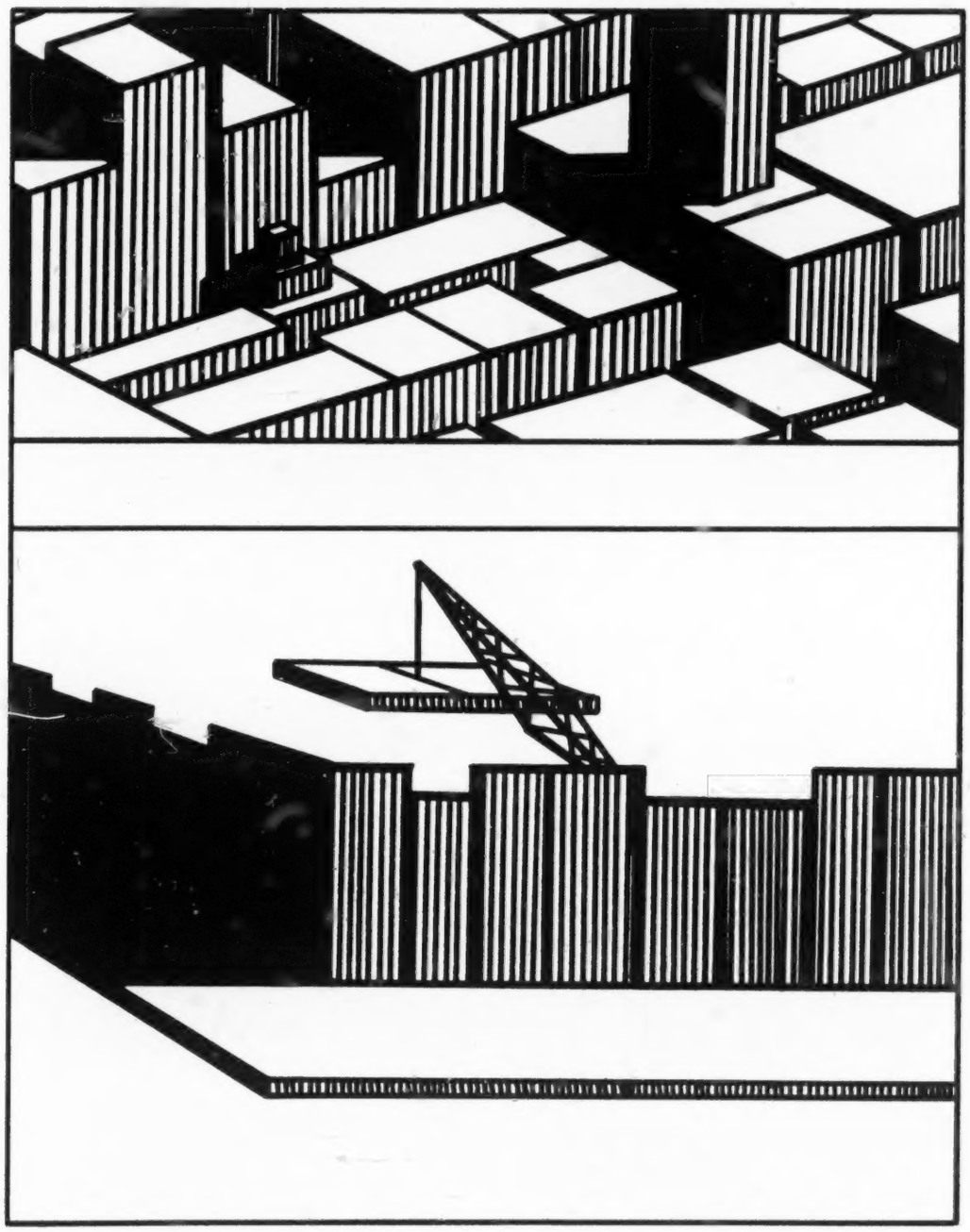
The City of Cambridge is sponsoring a unique program for providing residents and students with information on the environment of the city. The Cambridge Historical Commission was established in 1963 and is supported by minicipal funds. The focus of the Commission's work is upon Cambridge architecture as it reflects both historical and sociological aspects of the city's past and present and as it provides an entre to better understanding the urban environment. The Commission staff is preparing a five-volume survey of Cambridge, each volume examining in detail a different section of the city and discussing how its architecture developed, what it reveals about the community, and what directions it might take in the future. Two survey reports, one on East Cambridge and one on Mid-Cambridge, are completed and can be purchased from the MIT Press. The other three are forthcoming.

The most popular Commission publication is its *Guide to Cambridge Architecture: Ten Walking Tours,* available in many local bookstores. The *Guide* was written to encourage people to

study the physical environment of the city on their own. It can be easily used by students, scholars, and local residents and offers a wealth of pertinent information about the social as well as the historical and aesthetic implications that the city's buildings have about its development.

Other activities of the Commission include offering information to students, organizations, and neighborhood groups about Cambridge architecture and land areas, and advising private home-owners on their houses.

What is particularly interesting about the Commission is its emphasis upon the social aspects of the environment. While there are some isolated examples of very good architecture in the city, most Cambridge buildings are residential, 19th century vernacular designs, cutting across all economic levels and not necessarily noteworthy when viewed only from an aesthetic point of view. The City of Cambridge, however, was interested in getting its residents involved in the history and the dynamics of their community, and started the Cambridge Historical Commission to use architecture as one means of accomplishing this.



COLLEGES AND UNIVERSITIES

Courses on ecology, environmental issues, and environmental education are fast entering the catalogues of most colleges and universities. These courses range in concern from teaching methods for outdoor education to city planning and urban design, from scientific and technological considerations of ecological problems to investigations that are socially and politically oriented. With this recent proliferation, any review of current course offerings in Massachusetts colleges and universities would be quickly out-of-date. Those who are interested in finding out about course offerings pertinent to environmental education, either for themselves or for students, or in locating professional expertise in related fields to assist with curriculum development, should check with specific institutions. Science departments, departments of urban studies and city planning, and often newly organized departments or centers for environmental studies are the most obvious starting places though relevant courses are sometimes offered in other divisions as well. This publication highlights three unique programs underway in Massachusetts institutions.

CENTER FOR ENVIRONMENTAL STUDIES

Williams College
Williamstown, Massachusetts 01267
Tel: (413) 458-7131

Andrew J. W. Scheffey, Director

In October, 1968, Williams College established a Center for Environmental Studies as an interdepartmental organization cutting across the sciences, social studies, and the arts in an effort to integrate research, development, and education on environmental issues. The Center also represents an expansion of the traditional role of academic institutions as it attempts to reach out into the community and to work cooperatively with

the community on immediate and long range environmental problems.

The Center is actively involved in research and education focused upon the problems of Berkshire County. It was instrumental in the formation of the Berkshire Panel for the Public Environment, a venture which it sponsors cooperatively with several other county organizations. The Panel of 75 members serves as a forum for discussion of issues pertinent to the quality of the local environment, such as highway planning procedures, solid waste disposal, water resource planning, vacation home development, and conservation education. Members of the Center for Environmental Studies play an important role in preparing background papers and research reports on these issues. The future direction of the Panel is still open; some members believe that it should assume a more active role in formulating and reviewing development proposals and in shaping regional environmental policies.

Another activity of the Center is hinterland research, the study of environmental issues facing those areas of the country beyond the large urban concentrations. These areas are now experiencing rapid changes in population and land use and are therefore facing new threats to their environmental well-being. The Center, using Berkshire County as a model, is involved in several undertakings designed to confront the problems of the hinterland. It is sponsoring conferences on related issues, considering plans for a graduate level program for senior government officials particularly interested in policy and planning issues regarding non-urban areas, surveying environmental programs in New England colleges and universities that are geared to the problems of rural and hinterland areas, and studying the feasibility of a quasi-public corporation capable of acquiring and managing small tracts of land and supervising their development according to strict environmental standards.

Within the college itself, the Center has coordinated a new program in environmental education at the undergraduate level. Students may now participate in a coordinate program in which they select courses with an environmental focus. The program includes a balance of art, science, and social science courses and seminars, several of which have been newly designed to provide for both broad understanding of the issues and opportunity to synthesize various fields.

INSTITUTE FOR MAN AND HIS ENVIRONMENT

University of Massachusetts
Amherst, Massachusetts 01002
Tel: (413) 545-0666

Mortimer H. Appley, Dean of the Graduate School

Plans are emerging at the University of Massachusetts for establishing an Institute for Man and His Environment that will provide interdisciplinary programs in education, research, and public service on issues that affect the quality of urban and rural environments. The Institute will draw on the resources of the institutions in the Five College Community — the University of Massachusetts, Amherst College, Smith College, Mt. Holyoke College, and Hampshire College and will offer broad opportunities for students and faculty to cut across traditional disciplines in investigating human ecosystems, natural ecosystems, and strategies for environmental planning and policy.

For the undergraduate student, new programs in environmental studies are to be offered at the university, coordinated through the Institute. For the community, in the immediate geographic area and throughout the state, the Institute's Outreach program anticipates mobilizing expertise to provide research and technical assistance on urban and rural environment problems. In addition, the Institute is to conduct a research program, sponsoring studies in conjunction with relevant departments that will contribute to better understanding the complex relationships among man, social institutions, and environmental systems.

At present, the Institute is still taking shape; in the future, it may grow into a major resource on the environment.

WALTHAM FIELD STATION

240 Beaver Street
Waltham, Massachusetts 02154
Tel: (617) 891-0650

John Naegele, Director

The Department of Environmental Sciences of the University of Massachusetts at the Waltham Field Station has two major functions: research and communication. Its research activities,

which it conducts both on its own initiative and in response to requests from the public, include identifying and solving problems related to agricultural, natural, and community resources such as flowers, vegetables, and shade trees; air, water, and soil pollution; and recreational lakes and turf. Secondly, the Field Station seeks to provide information for appropriate clientele through conferences, publications, extension programs, and continuing education courses. The staff is particularly interested in reaching teachers, and sponsors seminars on approaches to teaching environmental sciences and ecology. Some are offered as credit courses.

Literature on various aspects of the environment and materials useful for instruction as well as personal assistance in locating additional resource materials and planning educational activities are available at the Field Station for students and teachers. Student groups and individuals are welcome to visit the Station, tour its facilities, examine its research projects, and make use of its services.

BIBLIOGRAPHIES

A thorough bibliography of literature, films, and materials pertinent to environmental education would be too long for inclusion in this publication. Instead, because there are already good bibliographies in the field that have been prepared by educational organizations and directed specifically to teachers and curriculum planners, it seems appropriate to direct the reader to several of these sources.

The AAAS Science Book List, Prepared by the American Association for the Advancement of Science, Third Edition, 1970. $9.00 payable with order or $10.00 if billed.

Source: American Association for the Advancement of Science
1515 Massachusetts Avenue, N.W.
Washington, D.C. 20036

This bibliography of literature in science and mathematics combines revisions to two previous AAAS Science Book Lists and now includes material for young children, junior high through college students, and interested laymen. Entries are categorized by scientific fields such as Physics, Astronomy, Paleontology. Each entry includes title, author, publisher, date, length, price, and a one sentence description.

Boston Public Library Film List, Compiled by the staff of the Boston Public Library, to be issued by December, 1970. $3.00 payable with order.

Source: Trustees of the Boston Public Library
Attention: Miss Helen Sevagian
Information Office
Boston Public Library
P.O. Box 286
Boston, Massachusetts 02117

Now in preparation, this catalogue is to provide a complete list of the over 2,500 16 mm films available on loan from the Boston Public Library. The collection includes many films on conservation, ecology, pollution, and other environmental issues. Each entry in the catalogue will include a one paragraph annotation of the film.

Conservation Education: A Selected Bibliography, Compiled by Joan Carvajal and Martha E. Munger, Conservation Education Association, 1968. 98 pp. $2.50.

Source: Interstate Printers and Publishers, Inc.
Danville, Illinois 61832

This is a well-annotated bibliography of hardbound and paperback books published in the United States. Titles are arranged according to subject categories and by topics within these categories. Categories include Interrelationship of Resources, Natural Resources, Role of Man, Tools for the Teacher, Vocational Materials, and Avocational Materials. Each entry includes title, author, publisher, cost, appropriate reading level, length, and a one paragraph review. Addresses of publishers are included. In addition, a particularly helpful section of the book suggests basic collections that might be purchased for various grade levels and for teachers in $25, $50, $100, and $150 price ranges.

Conservation Education Publications, Compiled by Raymond L. Gehling, Jr., Massachusetts Department of Education; and William H. Coates, U.S. Department of Agriculture, Soil Conservation Service; Massachusetts Department of Education. 4 pp. No charge.

Source: Supervisor of Conservation Education
Bureau of Elementary and Secondary Education
Massachusetts Department of Education
182 Tremont Street
Boston, Massachusetts 02111

This short list provides titles, authors, publishers, and costs of forty-three books concerning conservation education. Most of the books are field guides or teacher guides on teaching techniques and curricula.

A Critical Index of Films and Filmstrips in Conservation, Compiled by the Audio Visual Center of the Conservation Foundation, 1965. 78 pp. Out of print; check libraries.

Films and filmstrips are catagorized into the following groups: Renewable Resources; Non-Renewable Resources; Resources and People; Ecology; Films to Fit Special Problems including Pesticides, Pollution, Recreation, Teaching Conservation, and Community Action; and Films and Filmstrips Suggested by Three Teachers. Each entry includes the

film title, its source, provisions for its loan or purchase, appropriate audience, and a one or two paragraph description.

Because this catalogue is out of print, the Conservation Foundation will send a list of the entry titles to those who request it, although this informal list does not include the film descriptions. There is no charge.

Source: The Conservation Foundation
1717 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Environmental Education for Everyone: A Bibliography of Curriculum Materials for Environmental Studies, Compiled by Ellie Snyder, National Science Teachers Association, 1970. 36 pp. 75c.

Source: National Science Teachers Association
1201 16th Street N.W.
Washington, D.C. 20036

Originally prepared for a two-day workshop preceding the 1970 annual meeting of the NSTA, this bibliography is now available to interested teachers. The entries include solicited recommendations from school districts with environmental education programs, Federal agencies, associations, companies, science teachers, and members of the NSTA. The approximately 200 entries are organized as follows: Programs in Environmental Education; Single Units, Experiments and Activities; Enrichment Reading in Environment and Conservation, Natural History and Ecology, Natural Resources, Pollution, Urban, and Other; Periodicals; Bibliographies, Lists and Catalogues; Films and Filmstrips; Miscellaneous Materials and Kits of Teaching Aids; and Miscellaneous Programs and Projects.

Entires are listed alphabetically by title and include the author, publisher, date, source address, price, grade level, and a brief description of content.

An Index to Education for the Improvement of the Environment, Prepared by the Massachusetts Teachers Association, 1970. $1.50.

Source: Massachusetts Teachers Association
Department of Educational Services
20 Ashburton Place
Boston, Massachusetts 02108

This publication includes both teaching suggestions and

short bibliographies of books and films about environmental issues. The books presented in the Basic Ecology Bibliography are grouped into three categories: Overview of Ecological Problems, Texts and Anthologies, and The Human Animal. Entries include titles, authors, publishers, and publication dates. Its Environmental Film List provides titles, length, and cost or rental fees for a short list of films. Its list of films on the world population crisis provides more detailed description of several films.

"The Little House Syndrome Versus Mike Mulligan and Mary Anne," by Katherine M. Heylman, *The Library Journal,* Vol. 95 #8, April 15, 1970. Single Copy $1.00.

Source: R. R. Bowker Company, Publishers
1180 Avenue of the Americas
New York, New York 10036

This article discusses books for young children that deal with ecology, conservation, and pollution. It includes a bibliography of literature that approaches environmental issues realistically for the young reader.

Oceanography in Print: A Selected List of Educational Resources, Compiled by Lynn Forbes, Falmouth Oceanographic Education Center, 1968. 58 pp.

Source: Falmouth Oceanographic Education Center
Falmouth Public Schools
Falmouth, Massachusetts 02541

This booklet is an outstanding source of information on books, periodicals, films, maps, and other educational materials in the field of oceanography. Prepared in conjunction with the Woods Hole Oceanographic Institute and the Marine Biological Laboratories, this bibliography presents entires that have been carefully selected for accuracy, thoroughness, and readability. Books are arranged according to audience level from elementary grades through adult-technical and by subject within these groups. Each entry includes publisher and cost and an informative review. Periodicals are listed with publisher and subscription cost. Films are reviewed according to audience level and entries include purchase information. Sources of maps and other catalogues and bibliographies are also listed.

A Selected List of Filmstrips on the Conservation of Natural Resources, Compiled by Jean Larson Adams and Howard H. Michaud, Conservation Education Association, 1968. 42 pp. 50c.

Source: The Interstate Printers and Publishers, Inc.
Danville, Illinois 61832

This bibliography includes reviews and evaluations of 115 filmstrips recommended by the compilers. Filmstrips are grouped into the following categories: General Conservation, Ecology and Resource Interrelationships, Forest Trees and Other Plants, Minerals, Soil and Land, Water, and Wildlife. Each entry includes filmstrip title, name and address of source, purchase cost or loan provisions, appropriate grade level and curriculum area.

Soil and Water Conservation Films for the Northeast, Prepared by the Soil Conservation Service, U.S. Department of Agriculture, 1969. 4 pp. No charge.

Sources: Motion Picture Library
USDA — Soil Conservation Service
7600 West Chester Pike
Upper Darby, Pennsylvania 19082
and
Supervisor of Conservation Education
Bureau of Elementary and Secondary Education
Massachusetts Department of Education
182 Tremont Street
Boston, Massachusetts 02111

The U.S. Department of Agriculture provides 16 mm films free of charge to interested groups. Their bibliography of available films indicates for each entry the film title, length, appropriate audience (elementary, junior high, high school, adult), and offers a one or two line description of the film's contents.

What is a City?: A Multi-Media Guide on Urban Living, Edited by Rose Moorachian, Boston Public Library, 1969. 152 pp. $2.00 payable with order.

Source: Trustees of the Boston Public Library
Attention: Miss Helen Sevagian
Information Office
Boston Public Library
P.O. Box 286
Boston, Massachusetts 02117

This publication reviews books, 16 mm films, filmstrips, loops, pamphlets, periodicals, recordings, and realia pertinent to city life and urban environment for pre-school children through high school students. Entries are organized into the following categories: What is a City?; A City is People — Famous People, Children, Teenagers, Gangs, Victims of the City, Families, New Comers; A City is Many Problems, Many Solutions — Living in the Slums, Barriers, Crime, City Planning and Renewal; A City is Transportation; A Place Where People Earn a Living; Education; Government and Services; Fun Places; Structures Above Ground and Under Ground; Nature; Music and Art; A Place with Personality; A Place Where Some Things Happen Which Cannot be Explained; and Cities of the Future.

For each entry the editor has provided information on the publisher, date of publication, length, and a one paragraph review. For films, the addresses of publishers and distributors are included.

AFTERWORD

We hope that this compilation of educational programs, organizations, and other resources will stimulate educators in their thinking about environmental education and open some channels for bringing environmental study to their students. We anticipate that with the rapidly growing interest in the subject this publication will soon become out-of-date. New programs and new approaches are constantly emerging. For that reason we have included a Lead Report form similar to the form we include in our KALEIDOSCOPE publications. We ask that anyone who knows of an interesting or innovative program in environmental education use the form to notify the Bureau of Curriculum Innovation. In this way, we in the Bureau can update our information and devote future publications to new practices in environmental education throughout Massachusetts.

Robert A. Watson, Director
Bureau of Curriculum Innovation

How to Multiply an Innovation

Q: *Who may send in a promising practice?*

A: Anyone — parent, student, teacher, principal, superintendent, news reporter, citizen, organization member, businessman — anyone.

Q: *What kinds of projects are considered suitable for reporting?*

A: It may be a small classroom or outdoor practice, a pilot project worthy of further attention, a homegrown or national curriculum, or a cooperative venture with local conservation groups or other organizations concerned with the environment. Projects may be in the schools or peripheral to the schools. If there is a question about suitability, feel free to contact the area UNLOCK consultant or the Bureau office.

Q: *What criteria are used in making decisions about which projects to include?*

A: Criteria include evidence of imagination, a capacity to be transferred to another setting fairly easily, the serving of new or neglected audiences, interesting rearrangements or variations, the presence of new materials, and timeliness.

Q: *How new must the idea be?*

A: It may be brand new or several years in practice.

Q: *Are federally-funded programs eligible?*

A: Yes, if they meet the above criteria.

Q: *How much information must the reporter supply?*

A: It is extremely helpful to have just a descriptive name of the program, a sentence or two about it, and the name of an information contact. This may be transmitted by letter or by the Environmental Education Lead Report form in this book. We appreciate as much data as the reporter can gather beyond the basics.

Q: *What is meant by "information contact" on the form?*

A: This should be the person most in the middle, most knowledgeable about the idea. It may be a program director or teacher. The information contact should be able to answer in some detail questions from inquirers.

Q: *What is meant by "administrative contact" on the form?*

A: This should be the building administrator or the citywide staff person who has administrative responsibility for the program and who can answer questions from that perspective.

Q: *Where should the information be sent?*

A: It can come directly to the Bureau or go to the area UNLOCK consultant or to the local UNLOCK representative. The advantage of sending it to one of the UNLOCK agents is that he can add additional information to it before sending it on to the Bureau.

Q: *What happens to the Lead Report once it is turned in?*

A: A Bureau staff member further investigates the lead, contacting the name given. If the idea seems appropriate for publication, he makes sufficient inquiries by telephone or personal visit to gather information for a write-up.

List of Area UNLOCK Consultants

Berkshire Area:	Thomas White, Massachusetts Department of Education Regional Office, 7 North St., Pittsfield, 01201. (413) 499-0745
Bristol Area:	E. Curtis Hall, Massachusetts Department of Education Regional Office, 3902 Cranberry Highway, East Wareham (Mail: RFD #3, Buzzards Bay, 02532). (617) 295-4191
Cape and Island Area:	William Sullivan, Bourne Grammar School, Bourne, 02532. (617) 759-4234
Essex Area:	Leo Bisaillon, Beverly Public Schools, Beverly, 01095. (617) 922-0316
Franklin Area:	Mrs. Harriette Enoch, 67 Memorial Drive, Amherst, 01002. (413) 253-2928
Hampden Area:	Dr. Robert Saisi, Westfield State College, Westfield, 01085. (413) 568-3311 x40
Hampshire Area:	Richard Krzanowski, Middle Annex, 9 Center St., Easthampton, 01027. (413) 527-1510
Northern Middlesex Area:	Mrs. Beverly Lydiard, 4 Fairway Rd., Acton, 01720. (617) 263-7070
Southern Middlesex Area:	Joseph Hannigan, 70 Warren Rd., Framingham, 01720. (617) 875-5025
Plymouth Area:	Elizabeth Tormey, Bridgewater-Raynham Reg. High School, Mt. Prospect St., Bridgewater, 02324. (617) 697-6902
Suffolk Area:	Barbara Kaufman, Bureau of Curriculum Innovation, 182 Tremont St., Boston, 02111. (617) 727-5790
Northern Worcester Area:	Harold F. (Jack) Desmond, Junior High Lab School, Fitchburg State College, Fitchburg, 01420. (617) 343-6417
Southern Worcester Area:	Roger Charette, Tantasqua Reg. High School, Main St., Sturbridge, 01566. (617) 347-9301

ENVIRONMENTAL EDUCATION LEAD REPORT

Complete information is helpful, but do not let lack of some data prevent you from sending in a report. The essential things are a descriptive title, an information contact, and a couple of sentences defining the project.

Return completed form to your area or local UNLOCK representative or to the Bureau of Curriculum Innovation, 182 Tremont Street, Boston, Mass. 02111

Descriptive title _____

Location (school/street address/town/zip) _____

_____

Reported by _____ Relation to project _____

Information contact(s) _____ Relation to project _____

Address _____ Phone _____

Administrative contact _____ Title _____

Address _____ Phone _____

Superintendent _____ _____

Date project operational _____ No. students involved _____

Approximate yearly cost, personnel _____ Materials _____

Cost over and above regular budget _____ Source(s) of funds _____

Dissemination materials available — films, brochures, etc. _____

_____

Visiting policy — if definite or unusual _____

(Please see other side)

DESCRIPTION A concise statement of 100-300 words is very helpful and often sufficient for our purposes. If, however, you would like to add further information and attach descriptive materials, please do so. *Photographs, illustrations, and diagrams are also welcome.* In preparing a description, include such items as how and why the practice started; the age group and any special characteristics of its audience; specific examples of materials used and activities undertaken; some idea of physical arrangements and logistics; the project's strong points; the project's weak points; any critical problems and how they were solved; how it differs from previous practices; results/impact of program (anecdotes and/or formal evaluation).

Comment by local/area UNLOCK representative:

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